

GEOGRAPHICAL EXPLORATIONS AND SURVEYS

WEST OF THE 100TH MERIDIAN.

LOGARITHM, TRAVERSE,

AND

ALTITUDE TABLES.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1875.

LOGARITHMS OF NUMBERS.

Logarithms of Numbers.

Natural numbers.											Proportional parts.									
	0	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	
10	0000	0043	0086	0128	0170	0212	0253	0294	0334	0374	4	8	12	17	21	25	29	33	37	
11	0414	0453	0492	0531	0569	0607	0645	0682	0719	0755	4	8	11	15	19	23	26	30	34	
12	0792	0828	0864	0899	0934	0969	1004	1033	1072	1106	3	7	10	14	17	21	24	28	31	
13	1139	1173	1206	1239	1271	1303	1335	1367	1399	1430	3	6	10	13	16	19	23	26	29	
14	1461	1492	1523	1553	1584	1614	1644	1673	1703	1732	3	6	9	12	15	18	21	24	27	
15	1761	1790	1818	1847	1875	1903	1931	1959	1987	2014	3	6	8	11	14	17	20	22	25	
16	2041	2068	2095	2122	2148	2175	2201	2227	2253	2279	3	5	8	11	13	16	18	21	24	
17	2304	2330	2355	2380	2405	2430	2455	2480	2504	2529	2	5	7	10	12	15	17	20	22	
18	2553	2577	2601	2625	2648	2672	2695	2718	2742	2765	2	5	7	9	12	14	16	19	21	
19	2788	2810	2833	2856	2878	2900	2923	2945	2967	2989	2	4	7	9	11	13	16	18	20	
20	3010	3032	3054	3075	3096	3118	3139	3160	3181	3201	2	4	6	8	11	13	15	17	19	
21	3222	3243	3263	3283	3304	3324	3345	3365	3385	3404	2	4	6	8	10	12	14	16	18	
22	3424	3444	3464	3484	3502	3522	3541	3560	3579	3598	2	4	6	8	9	11	13	15	17	
23	3617	3636	3655	3674	3692	3711	3729	3747	3766	3784	2	4	6	7	9	11	13	15	17	
24	3802	3820	3838	3856	3874	3892	3909	3927	3945	3962	2	4	5	7	9	11	12	14	16	
25	3979	3997	4014	4031	4048	4065	4082	4099	4116	4133	2	3	5	7	9	10	12	14	15	
26	4150	4166	4183	4200	4216	4232	4249	4265	4281	4298	2	3	5	7	8	10	11	13	15	
27	4314	4330	4346	4362	4378	4393	4409	4425	4440	4456	2	3	5	6	8	9	11	12	14	
28	4472	4487	4502	4518	4533	4548	4564	4579	4594	4609	2	3	5	6	8	9	11	12	14	
29	4624	4639	4654	4669	4683	4698	4713	4728	4742	4757	1	3	4	6	7	9	10	12	13	
30	4771	4786	4800	4814	4829	4843	4857	4871	4886	4900	1	3	4	6	7	9	10	11	13	
31	4914	4928	4942	4955	4969	4983	4997	5011	5024	5038	1	3	4	6	7	8	10	11	12	
32	5051	5065	5079	5092	5105	5119	5132	5145	5159	5172	1	3	4	5	7	8	9	11	12	
33	5185	5198	5211	5224	5237	5250	5263	5276	5289	5302	1	3	4	5	6	8	9	10	12	
34	5315	5328	5340	5353	5366	5378	5391	5403	5416	5428	1	3	4	5	6	8	9	10	11	
35	5441	5453	5465	5478	5490	5502	5514	5527	5539	5551	1	2	4	5	6	7	9	10	11	
36	5563	5575	5587	5599	5611	5623	5635	5647	5658	5670	1	2	4	5	6	7	8	9	10	
37	5682	5694	5705	5717	5729	5740	5752	5763	5775	5786	1	2	3	5	6	7	8	9	10	
38	5798	5809	5821	5832	5843	5855	5866	5877	5888	5899	1	2	3	5	6	7	8	9	10	
39	5911	5922	5933	5944	5955	5966	5977	5988	5999	6010	1	2	3	4	5	7	8	9	10	
40	6021	6031	6042	6053	6064	6075	6085	6096	6107	6117	1	2	3	4	5	6	8	9	10	
41	6128	6138	6149	6160	6170	6180	6191	6201	6212	6222	1	2	3	4	5	6	7	8	9	
42	6232	6243	6253	6263	6274	6284	6294	6304	6314	6325	1	2	3	4	5	6	7	8	9	
43	6335	6345	6355	6365	6375	6385	6395	6405	6415	6425	1	2	3	4	5	6	7	8	9	
44	6435	6444	6454	6464	6474	6484	6493	6503	6513	6522	1	2	3	4	5	6	7	8	9	
45	6532	6542	6551	6561	6571	6580	6590	6599	6609	6618	1	2	3	4	5	6	7	8	9	
46	6628	6637	6646	6656	6665	6675	6684	6693	6702	6712	1	2	3	4	5	6	7	8	9	
47	6721	6730	6739	6749	6758	6767	6776	6785	6794	6803	1	2	3	4	5	6	7	8	9	
48	6812	6821	6830	6839	6848	6857	6866	6875	6884	6893	1	2	3	4	4	5	6	7	8	
49	6902	6911	6920	6928	6937	6946	6955	6964	6972	6981	1	2	3	4	4	5	6	7	8	
50	6990	6998	7007	7016	7024	7033	7042	7050	7059	7067	1	2	3	3	3	4	5	6	7	
51	7076	7084	7093	7101	7110	7118	7126	7135	7143	7152	1	2	3	3	3	4	5	6	7	
52	7160	7168	7177	7185	7193	7202	7210	7218	7226	7235	1	2	3	3	3	4	5	6	7	
53	7243	7251	7259	7267	7275	7284	7292	7300	7308	7316	1	2	2	3	3	4	5	6	6	
54	7324	7332	7340	7348	7356	7364	7372	7380	7388	7396	1	2	2	3	3	4	5	6	7	
	0	1	2	3	4	5	6	7	8	9										

Logarithms of Numbers.

Natural numbers.	0	1	2	3	4	5	6	7	8	9	Proportional parts.								
											1	2	3	4	5	6	7	8	9
55	7404	7412	7419	7427	7435	7443	7451	7459	7466	7474	1	2	2	3	4	5	5	6	7
56	7482	7490	7497	7505	7513	7520	7528	7536	7543	7551	1	2	2	3	4	5	5	6	7
57	7559	7566	7574	7582	7589	7597	7604	7612	7619	7627	1	2	2	3	4	5	5	6	7
58	7634	7642	7649	7657	7661	7672	7679	7686	7694	7701	1	1	2	3	4	4	5	6	7
59	7709	7716	7723	7731	7738	7745	7752	7760	7767	7774	1	1	2	3	4	4	5	6	7
60	7782	7789	7796	7803	7810	7818	7825	7832	7839	7846	1	1	2	3	4	4	5	6	6
61	7853	7860	7868	7875	7882	7889	7896	7903	7910	7917	1	1	2	3	4	4	5	6	6
62	7924	7931	7938	7945	7952	7959	7966	7973	7980	7987	1	1	2	3	3	4	5	6	6
63	7993	8000	8007	8014	8021	8028	8035	8041	8048	8055	1	1	2	3	3	4	5	5	6
64	8062	8069	8075	8082	8089	8096	8102	8109	8116	8122	1	1	2	3	3	4	5	5	6
65	8129	8136	8142	8149	8156	8162	8169	8176	8182	8189	1	1	2	3	3	4	5	5	6
66	8195	8202	8209	8215	8222	8228	8235	8241	8248	8254	1	1	2	3	3	4	5	5	6
67	8261	8267	8274	8280	8287	8293	8299	8306	8312	8319	1	1	2	3	3	4	5	5	6
68	8325	8331	8338	8344	8351	8357	8363	8370	8376	8382	1	1	2	3	3	4	4	5	6
69	8388	8395	8401	8407	8414	8420	8426	8432	8439	8445	1	1	2	2	3	4	4	5	6
70	8451	8457	8463	8470	8476	8482	8488	8494	8500	8506	1	1	2	2	3	4	4	5	6
71	8513	8519	8525	8531	8537	8543	8549	8555	8561	8567	1	1	2	2	3	4	4	5	5
72	8573	8579	8585	8591	8597	8603	8609	8615	8621	8627	1	1	2	2	3	4	4	5	5
73	8633	8639	8645	8651	8657	8663	8669	8675	8681	8686	1	1	2	2	3	4	4	5	5
74	8692	8698	8704	8710	8716	8722	8727	8733	8739	8745	1	1	2	2	3	4	4	5	5
75	8751	8756	8762	8768	8774	8779	8785	8791	8797	8802	1	1	2	2	3	3	4	5	5
76	8808	8814	8820	8825	8831	8837	8842	8848	8854	8859	1	1	2	2	3	3	4	5	5
77	8865	8871	8876	8882	8887	8893	8899	8904	8910	8915	1	1	2	2	3	3	4	5	5
78	8921	8927	8932	8938	8943	8949	8954	8960	8965	8971	1	1	2	2	3	3	4	4	5
79	8976	8982	8987	8993	8998	9004	9009	9015	9020	9025	1	1	2	2	3	3	4	4	5
80	9031	9036	9042	9047	9053	9058	9063	9069	9074	9079	1	1	2	2	3	3	4	4	5
81	9085	9090	9096	9101	9106	9112	9117	9122	9128	9133	1	1	2	2	3	3	4	4	5
82	9138	9143	9149	9154	9159	9165	9170	9175	9180	9186	1	1	2	2	3	3	4	4	5
83	9191	9196	9201	9206	9212	9217	9222	9227	9232	9238	1	1	2	2	3	3	4	4	5
84	9243	9248	9253	9258	9263	9269	9274	9279	9284	9289	1	1	2	2	3	3	4	4	5
85	9294	9299	9304	9309	9315	9320	9325	9330	9335	9340	1	1	2	2	3	3	4	4	5
86	9345	9350	9355	9360	9365	9370	9375	9380	9385	9390	1	1	2	2	3	3	4	4	5
87	9395	9400	9405	9410	9415	9420	9425	9430	9435	9440	0	1	1	2	2	3	3	4	4
88	9445	9450	9455	9460	9465	9469	9474	9479	9484	9489	0	1	1	2	2	3	3	4	4
89	9494	9499	9504	9509	9513	9518	9523	9528	9533	9538	0	1	1	2	2	3	3	4	4
90	9542	9547	9552	9557	9562	9566	9571	9576	9581	9586	0	1	1	2	2	3	3	4	4
91	9590	9595	9600	9605	9609	9614	9619	9624	9628	9633	0	1	1	2	2	3	3	4	4
92	9638	9643	9647	9652	9657	9661	9666	9671	9675	9680	0	1	1	2	2	3	3	4	4
93	9685	9689	9694	9699	9703	9708	9713	9717	9722	9727	0	1	1	2	2	3	3	4	4
94	9731	9736	9741	9745	9750	9754	9759	9763	9768	9773	0	1	1	2	2	3	3	4	4
95	9777	9782	9786	9791	9795	9800	9805	9809	9814	9818	0	1	1	2	2	3	3	4	4
96	9823	9827	9832	9836	9841	9845	9850	9854	9859	9863	0	1	1	2	2	3	3	4	4
97	9868	9872	9877	9881	9886	9890	9894	9899	9903	9908	0	1	1	2	2	3	3	4	4
98	9912	9917	9921	9926	9930	9934	9939	9943	9948	9952	0	1	1	2	2	3	3	4	4
99	9956	9961	9965	9969	9974	9978	9983	9987	9991	9996	0	1	1	2	2	3	3	4	4
0	1	2	3	4	5	6	7	8	9										

LOGARITHMS OF TRIGONOMETRICAL FUNCTIONS.

0°

1°

/	sin.		tang.		cotg.		cos.	/	/	sin.		tang.		cotg.		cos.	/
0	— 00		— 00		00		0.0000	60	0	8.2419	71	8.2419	72	1.7581	9.9999	60	
1	6.4637	3041	6.4637	3011	3.5363	0.0000	59	59	1	8.2490	71	8.2491	71	1.7509	9.9999	59	
2	6.7648	1760	6.7648	1760	3.2352	0.0000	58	58	2	8.2561	69	8.2562	69	1.7438	9.9999	58	
3	6.9408	1250	6.9408	1250	3.0592	0.0000	57	57	3	8.2630	69	8.2631	69	1.7369	9.9999	57	
4	7.0658		7.0658		2.9342	0.0000	56	56	4	8.2699	67	8.2700	67	1.7300	9.9999	56	
5	7.1627	969	7.1627	969	2.8373	0.0000	55	55	5	8.2766	66	8.2767	66	1.7233	9.9999	55	
6	7.2419	792	7.2419	792	2.7581	0.0000	54	54	6	8.2832	66	8.2833	66	1.7167	9.9999	54	
7	7.3088	669	7.3088	669	2.6912	0.0000	53	53	7	8.2898	66	8.2899	66	1.7101	9.9999	53	
8	7.3668	580	7.3668	580	2.6332	0.0000	52	52	8	8.2962	64	8.2963	64	1.7037	9.9999	52	
9	7.4180	512	7.4180	512	2.5820	0.0000	51	51	9	8.3025	63	8.3026	63	1.6974	9.9999	51	
10		457		457							63		63				
11	7.4637	414	7.4637	414	2.5363	0.0000	50	50	10	8.3088	62	8.3089	62	1.6911	9.9999	50	
12	7.5051	378	7.5051	378	2.4949	0.0000	49	49	11	8.3150	60	8.3150	61	1.6850	9.9999	49	
13	7.5429	348	7.5429	348	2.4571	0.0000	48	48	12	8.3211	60	8.3211	60	1.6789	9.9999	48	
14	7.5777	322	7.5777	322	2.4233	0.0000	47	47	13	8.3270	59	8.3271	59	1.6729	9.9999	47	
15	7.6099	299	7.6099	299	2.3901	0.0000	46	46	14	8.3329	59	8.3330	59	1.6670	9.9999	46	
16	7.6398		7.6398		2.3602	0.0000	45	45	15	8.3388	59	8.3389	59	1.6611	9.9999	45	
17	7.6678	280	7.6678	280	2.3322	0.0000	44	44	16	8.3445	57	8.3446	57	1.6554	9.9999	44	
18	7.6942	264	7.6942	264	2.3058	0.0000	43	43	17	8.3502	57	8.3503	57	1.6497	9.9999	43	
19	7.7190	248	7.7190	248	2.2810	0.0000	42	42	18	8.3558	56	8.3559	56	1.6441	9.9999	42	
	7.7425	235	7.7425	235	2.2575	0.0000	41	41	19	8.3613	55	8.3614	55	1.6386	9.9999	41	
		223		223							55		55				
20	7.7648	211	7.7648	211	2.2352	0.0000	40	40	20	8.3668	54	8.3669	54	1.6331	9.9999	40	
21	7.7859	202	7.7860	202	2.2140	0.0000	39	39	21	8.3722	53	8.3723	54	1.6277	9.9999	39	
22	7.8061	194	7.8062	193	2.1938	0.0000	38	38	22	8.3775	53	8.3776	53	1.6224	9.9999	38	
23	7.8255	184	7.8255	184	2.1745	0.0000	37	37	23	8.3828	53	8.3829	53	1.6171	9.9999	37	
24	7.8439	178	7.8439	178	2.1561	0.0000	36	36	24	8.3880	52	8.3881	52	1.6119	9.9999	36	
25	7.8617		7.8617		2.1383	0.0000	35	35			51		51				
26	7.8787	170	7.8787	170	2.1213	0.0000	34	34	25	8.3931	51	8.3932	51	1.6068	9.9999	35	
27	7.8951	164	7.8951	164	2.1049	0.0000	33	33	26	8.3982	51	8.3983	51	1.6017	9.9999	34	
28	7.9109	158	7.9109	158	2.0891	0.0000	32	32	27	8.4032	50	8.4033	50	1.5967	9.9999	33	
29	7.9261	152	7.9261	152	2.0739	0.0000	31	31	28	8.4083	50	8.4083	50	1.5917	9.9999	32	
		147		148					29	8.4131	49	8.4132	49	1.5868	9.9999	31	
30	7.9408		7.9409		2.0591	0.0000	30	30			48		48				
31	7.9551	143	7.9551	142	2.0449	0.0000	29	29	30	8.4179	48	8.4181	48	1.5819	9.9999	30	
32	7.9689	138	7.9689	138	2.0311	0.0000	28	28	31	8.4227	48	8.4229	47	1.5771	9.9998	29	
33	7.9823	134	7.9823	134	2.0177	0.0000	27	27	32	8.4275	47	8.4276	47	1.5724	9.9998	28	
34	7.9952	130	7.9952	129	2.0048	0.0000	26	26	33	8.4322	47	8.4323	47	1.5677	9.9998	27	
		126		126					34	8.4368	46	8.4370	46	1.5630	9.9998	26	
35	8.0078		8.0078		1.9922	0.0000	25	25			46		46				
36	8.0200	122	8.0200	122	1.9800	0.0000	24	24	35	8.4414	45	8.4416	45	1.5584	9.9998	25	
37	8.0319	119	8.0319	119	1.9681	0.0000	23	23	36	8.4459	45	8.4461	45	1.5539	9.9998	24	
38	8.0435	116	8.0435	116	1.9565	0.0000	22	22	37	8.4504	45	8.4506	45	1.5494	9.9998	23	
39	8.0548	113	8.0548	113	1.9452	0.0000	21	21	38	8.4549	44	8.4551	44	1.5449	9.9998	22	
		110		110					39	8.4593	44	8.4595	44	1.5405	9.9998	21	
40	8.0658		8.0658		1.9342	0.0000	20	20			43		43				
41	8.0765	107	8.0765	107	1.9235	0.0000	19	19	40	8.4637	43	8.4638	44	1.5362	9.9998	20	
42	8.0870	105	8.0870	105	1.9130	0.0000	18	18	41	8.4680	43	8.4682	44	1.5318	9.9998	19	
43	8.0972	102	8.0972	102	1.9028	0.0000	17	17	42	8.4723	42	8.4725	42	1.5275	9.9998	18	
44	8.1072	100	8.1072	100	1.8928	0.0000	16	16	43	8.4765	42	8.4767	42	1.5233	9.9998	17	
		97		98					44	8.4807	41	8.4809	41	1.5191	9.9998	16	
45	8.1169		8.1170		1.8830	0.0000	15	15			41		41				
46	8.1265	96	8.1265	95	1.8735	0.0000	14	14	45	8.4848	42	8.4851	41	1.5149	9.9998	15	
47	8.1358	93	8.1359	94	1.8641	0.0000	13	13	46	8.4890	40	8.4892	41	1.5108	9.9998	14	
48	8.1450	92	8.1450	91	1.8550	0.0000	12	12	47	8.4930	41	8.4933	41	1.5067	9.9998	13	
49	8.1539	89	8.1540	90	1.8460	0.0000	11	11	48	8.4971	40	8.4973	40	1.5027	9.9998	12	
		88		87					49	8.5011	40	8.5013	40	1.4987	9.9998	11	
50	8.1627		8.1627		1.8373	0.0000	10	10			39		39				
51	8.1713	86	8.1713	86	1.8287	0.0000	9	9	50	8.5050	40	8.5053	39	1.4947	9.9998	10	
52	8.1797	84	8.1798	85	1.8202	0.0000	8	8	51	8.5090	39	8.5092	39	1.4908	9.9998	9	
53	8.1880	83	8.1880	82	1.8120	9.9999	7	7	52	8.5129	38	8.5131	39	1.4869	9.9998	8	
54	8.1961	81	8.1962	82	1.8038	9.9999	6	6	53	8.5167	38	8.5170	38	1.4830	9.9998	7	
		80		79					54	8.5206	37	8.5208	38	1.4792	9.9998	6	
55	8.2041		8.2041		1.7959	9.9999	5	5			37		37				
56	8.2119	78	8.2120	79	1.7880	9.9999	4	4	55	8.5243	38	8.5246	37	1.4754	9.9998	5	
57	8.2196	77	8.2196	76	1.7804	9.9999	3	3	56	8.5281	37	8.5283	38	1.4717	9.9998	4	
58	8.2271	75	8.2272	74	1.7728	9.9999	2	2	57	8.5318	37	8.5321	37	1.4679	9.9997	3	
59	8.2346	73	8.2346	73	1.7654	9.9999	1	1	58	8.5355	37	8.5358	36	1.4642	9.9997	2	
									59	8.5392	36	8.5394	37	1.4606	9.9997	1	
60	8.2419		8.2419		1.7581	9.9999	0	0			36		37				
									60	8.5428		8.5431		1.4569	9.9997	0	
/	cos.	cotg.	tang.	sin.	/	/	cos.	cotg.	tang.	sin.	/						

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/	sin.	tang.	cotg.	cos.	/	/	sin.	tang.	cotg.	cos.	/				
0	8.5428	36	8.5431	36	1.4569	9.9997	60	0	8.7188	24	8.7194	24	1.2806	9.9994	60
1	8.5464	36	8.5467	36	1.4533	9.9997	59	1	8.7212	24	8.7218	24	1.2782	9.9994	59
2	8.5500	35	8.5503	35	1.4497	9.9997	58	2	8.7236	24	8.7242	24	1.2758	9.9994	58
3	8.5535	35	8.5538	35	1.4462	9.9997	57	3	8.7260	23	8.7266	24	1.2734	9.9994	57
4	8.5571	34	8.5573	35	1.4427	9.9997	56	4	8.7283	23	8.7290	23	1.2710	9.9994	56
5	8.5605	34	8.5608	35	1.4392	9.9997	55	5	8.7307	23	8.7313	23	1.2687	9.9994	55
6	8.5640	34	8.5643	34	1.4357	9.9997	54	6	8.7330	23	8.7337	24	1.2663	9.9994	54
7	8.5674	34	8.5677	34	1.4323	9.9997	53	7	8.7354	23	8.7360	23	1.2640	9.9994	53
8	8.5708	34	8.5711	34	1.4289	9.9997	52	8	8.7377	23	8.7383	23	1.2617	9.9994	52
9	8.5742	34	8.5745	34	1.4255	9.9997	51	9	8.7400	23	8.7406	23	1.2594	9.9993	51
10	8.5776	33	8.5779	33	1.4221	9.9997	50	10	8.7423	23	8.7429	23	1.2571	9.9993	50
11	8.5809	33	8.5812	33	1.4188	9.9997	49	11	8.7445	22	8.7452	23	1.2548	9.9993	49
12	8.5842	33	8.5845	33	1.4155	9.9997	48	12	8.7468	22	8.7475	23	1.2525	9.9993	48
13	8.5875	32	8.5878	33	1.4122	9.9997	47	13	8.7491	22	8.7497	22	1.2503	9.9993	47
14	8.5907	32	8.5911	32	1.4089	9.9997	46	14	8.7513	22	8.7520	22	1.2480	9.9993	46
15	8.5939	31	8.5943	32	1.4057	9.9997	45	15	8.7535	22	8.7542	23	1.2458	9.9993	45
16	8.5972	31	8.5975	32	1.4025	9.9997	44	16	8.7557	22	8.7565	22	1.2435	9.9993	44
17	8.6003	32	8.6007	31	1.3993	9.9997	43	17	8.7580	22	8.7587	22	1.2413	9.9993	43
18	8.6035	31	8.6038	32	1.3962	9.9996	42	18	8.7602	21	8.7609	22	1.2391	9.9993	42
19	8.6066	31	8.6070	31	1.3930	9.9996	41	19	8.7623	22	8.7631	21	1.2369	9.9993	41
20	8.6097	31	8.6101	31	1.3899	9.9996	40	20	8.7645	22	8.7652	22	1.2348	9.9993	40
21	8.6128	31	8.6132	31	1.3868	9.9996	39	21	8.7667	22	8.7674	22	1.2326	9.9993	39
22	8.6159	30	8.6163	30	1.3837	9.9996	38	22	8.7688	22	8.7696	21	1.2304	9.9993	38
23	8.6189	30	8.6193	30	1.3807	9.9996	37	23	8.7710	22	8.7717	21	1.2283	9.9992	37
24	8.6220	30	8.6223	31	1.3777	9.9996	36	24	8.7731	21	8.7739	22	1.2261	9.9992	36
25	8.6250	29	8.6254	29	1.3746	9.9996	35	25	8.7752	21	8.7760	21	1.2240	9.9992	35
26	8.6279	29	8.6283	29	1.3717	9.9996	34	26	8.7773	21	8.7781	21	1.2219	9.9992	34
27	8.6309	30	8.6313	30	1.3687	9.9996	33	27	8.7794	21	8.7802	21	1.2198	9.9992	33
28	8.6339	29	8.6343	29	1.3657	9.9996	32	28	8.7815	21	8.7823	21	1.2177	9.9992	32
29	8.6368	29	8.6372	29	1.3628	9.9996	31	29	8.7836	21	8.7844	21	1.2156	9.9992	31
30	8.6397	29	8.6401	29	1.3599	9.9996	30	30	8.7857	20	8.7865	21	1.2135	9.9992	30
31	8.6426	28	8.6430	29	1.3570	9.9996	29	31	8.7877	21	8.7886	20	1.2114	9.9992	29
32	8.6454	28	8.6459	28	1.3541	9.9996	28	32	8.7898	20	8.7906	21	1.2094	9.9992	28
33	8.6483	28	8.6487	28	1.3513	9.9996	27	33	8.7918	21	8.7927	20	1.2073	9.9992	27
34	8.6511	28	8.6515	28	1.3485	9.9996	26	34	8.7939	20	8.7947	20	1.2053	9.9992	26
35	8.6539	28	8.6544	27	1.3456	9.9996	25	35	8.7959	20	8.7967	21	1.2033	9.9992	25
36	8.6567	28	8.6571	27	1.3429	9.9996	24	36	8.7979	20	8.7988	20	1.2012	9.9991	24
37	8.6595	28	8.6599	28	1.3401	9.9995	23	37	8.7999	20	8.8008	20	1.1992	9.9991	23
38	8.6622	27	8.6627	28	1.3373	9.9995	22	38	8.8019	20	8.8028	20	1.1972	9.9991	22
39	8.6650	27	8.6654	28	1.3346	9.9995	21	39	8.8039	20	8.8048	19	1.1952	9.9991	21
40	8.6677	27	8.6682	27	1.3318	9.9995	20	40	8.8059	19	8.8067	20	1.1933	9.9991	20
41	8.6704	27	8.6709	27	1.3291	9.9995	19	41	8.8078	20	8.8087	20	1.1913	9.9991	19
42	8.6731	27	8.6736	26	1.3264	9.9995	18	42	8.8098	19	8.8107	19	1.1893	9.9991	18
43	8.6758	26	8.6762	27	1.3238	9.9995	17	43	8.8117	20	8.8126	20	1.1874	9.9991	17
44	8.6784	26	8.6789	26	1.3211	9.9995	16	44	8.8137	19	8.8146	19	1.1854	9.9991	16
45	8.6810	26	8.6815	27	1.3185	9.9995	15	45	8.8156	19	8.8165	20	1.1835	9.9991	15
46	8.6837	27	8.6842	26	1.3158	9.9995	14	46	8.8175	19	8.8185	20	1.1815	9.9991	14
47	8.6863	26	8.6868	26	1.3132	9.9995	13	47	8.8194	19	8.8204	19	1.1796	9.9991	13
48	8.6889	26	8.6894	26	1.3106	9.9995	12	48	8.8213	19	8.8223	19	1.1777	9.9990	12
49	8.6914	25	8.6920	25	1.3080	9.9995	11	49	8.8232	19	8.8242	19	1.1758	9.9990	11
50	8.6940	25	8.6945	26	1.3055	9.9995	10	50	8.8251	19	8.8261	19	1.1739	9.9990	10
51	8.6965	25	8.6971	25	1.3029	9.9995	9	51	8.8270	19	8.8280	19	1.1720	9.9990	9
52	8.6991	25	8.6996	25	1.3004	9.9995	8	52	8.8289	18	8.8299	18	1.1701	9.9990	8
53	8.7016	25	8.7021	25	1.2979	9.9994	7	53	8.8307	19	8.8317	19	1.1683	9.9990	7
54	8.7041	25	8.7046	25	1.2954	9.9994	6	54	8.8326	19	8.8336	19	1.1664	9.9990	6
55	8.7066	24	8.7071	25	1.2929	9.9994	5	55	8.8345	18	8.8355	18	1.1645	9.9990	5
56	8.7090	24	8.7095	25	1.2904	9.9994	4	56	8.8363	18	8.8373	18	1.1627	9.9990	4
57	8.7115	25	8.7121	24	1.2879	9.9994	3	57	8.8381	19	8.8392	18	1.1608	9.9990	3
58	8.7140	24	8.7145	25	1.2855	9.9994	2	58	8.8400	18	8.8410	18	1.1590	9.9990	2
59	8.7164	24	8.7170	24	1.2830	9.9994	1	59	8.8418	18	8.8428	18	1.1572	9.9989	1
60	8.7188		8.7194		1.2806	9.9994	0	60	8.8436		8.8446		1.1554	9.9989	0
/	cos.	cotg.	tang.	sin.	/	/	cos.	cotg.	tang.	sin.	/				

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/	sin.		tang.		cotg.	cos.	/	/	sin.		tang.		cotg.	cos.	/
0	8.8436	18	8.8446	19	1.1554	9.9989	60	0	8.9403	14	8.9420	14	1.0580	9.9983	60
1	8.8454	18	8.8465	18	1.1535	9.9989	59	1	8.9417	15	8.9434	14	1.0566	9.9983	59
2	8.8472	18	8.8483	18	1.1517	9.9989	58	2	8.9432	14	8.9449	15	1.0551	9.9983	58
3	8.8490	18	8.8501	17	1.1499	9.9989	57	3	8.9446	14	8.9463	14	1.0537	9.9983	57
4	8.8508	17	8.8518	18	1.1482	9.9989	56	4	8.9460	15	8.9477	15	1.0523	9.9983	56
5	8.8525	18	8.8536	18	1.1464	9.9989	55	5	8.9475	14	8.9492	14	1.0508	9.9983	55
6	8.8543	17	8.8554	18	1.1446	9.9989	54	6	8.9489	14	8.9506	14	1.0494	9.9983	54
7	8.8560	18	8.8572	17	1.1428	9.9989	53	7	8.9503	14	8.9520	14	1.0480	9.9983	53
8	8.8578	17	8.8589	18	1.1411	9.9989	52	8	8.9517	14	8.9534	14	1.0466	9.9983	52
9	8.8595	18	8.8607	17	1.1393	9.9989	51	9	8.9531	14	8.9548	15	1.0451	9.9983	51
10	8.8613	17	8.8624	18	1.1376	9.9989	50	10	8.9545	14	8.9563	14	1.0437	9.9982	50
11	8.8630	17	8.8642	17	1.1358	9.9988	49	11	8.9559	14	8.9577	14	1.0423	9.9982	49
12	8.8647	18	8.8659	17	1.1341	9.9988	48	12	8.9573	14	8.9591	14	1.0409	9.9982	48
13	8.8665	17	8.8676	18	1.1324	9.9988	47	13	8.9587	14	8.9605	14	1.0395	9.9982	47
14	8.8682	17	8.8694	17	1.1306	9.9988	46	14	8.9601	13	8.9619	14	1.0381	9.9982	46
15	8.8699	17	8.8711	17	1.1289	9.9988	45	15	8.9614	14	8.9633	13	1.0367	9.9982	45
16	8.8716	17	8.8728	17	1.1272	9.9988	44	16	8.9628	14	8.9646	13	1.0354	9.9982	44
17	8.8733	16	8.8745	17	1.1255	9.9988	43	17	8.9642	14	8.9660	14	1.0340	9.9982	43
18	8.8749	17	8.8762	16	1.1238	9.9988	42	18	8.9655	13	8.9674	14	1.0326	9.9981	42
19	8.8766	17	8.8778	17	1.1222	9.9988	41	19	8.9669	13	8.9688	13	1.0312	9.9981	41
20	8.8783	16	8.8795	17	1.1205	9.9988	40	20	8.9682	14	8.9701	14	1.0299	9.9981	40
21	8.8799	17	8.8812	17	1.1188	9.9987	39	21	8.9696	13	8.9715	14	1.0285	9.9981	39
22	8.8816	17	8.8829	16	1.1171	9.9987	38	22	8.9709	13	8.9729	13	1.0271	9.9981	38
23	8.8833	16	8.8845	17	1.1155	9.9987	37	23	8.9723	14	8.9742	14	1.0258	9.9981	37
24	8.8849	16	8.8862	16	1.1138	9.9987	36	24	8.9736	14	8.9756	13	1.0244	9.9981	36
25	8.8865	17	8.8878	17	1.1122	9.9987	35	25	8.9750	13	8.9769	13	1.0231	9.9981	35
26	8.8882	16	8.8895	16	1.1105	9.9987	34	26	8.9763	13	8.9782	13	1.0218	9.9980	34
27	8.8898	16	8.8911	16	1.1089	9.9987	33	27	8.9776	13	8.9796	13	1.0204	9.9980	33
28	8.8914	16	8.8927	17	1.1073	9.9987	32	28	8.9789	14	8.9809	14	1.0191	9.9980	32
29	8.8930	16	8.8944	16	1.1056	9.9987	31	29	8.9803	13	8.9823	13	1.0177	9.9980	31
30	8.8946	16	8.8960	16	1.1040	9.9987	30	30	8.9816	13	8.9836	13	1.0164	9.9980	30
31	8.8962	16	8.8976	16	1.1024	9.9986	29	31	8.9829	13	8.9849	13	1.0151	9.9980	29
32	8.8978	16	8.8992	16	1.1008	9.9986	28	32	8.9842	13	8.9862	13	1.0138	9.9980	28
33	8.8994	16	8.9008	16	1.0992	9.9986	27	33	8.9855	13	8.9875	13	1.0125	9.9980	27
34	8.9010	16	8.9024	16	1.0976	9.9986	26	34	8.9868	13	8.9888	13	1.0112	9.9979	26
35	8.9026	16	8.9040	16	1.0960	9.9986	25	35	8.9881	13	8.9901	14	1.0099	9.9979	25
36	8.9042	15	8.9056	16	1.0944	9.9986	24	36	8.9894	13	8.9915	13	1.0085	9.9979	24
37	8.9057	16	8.9071	15	1.0929	9.9986	23	37	8.9907	13	8.9928	12	1.0072	9.9979	23
38	8.9073	16	8.9087	16	1.0913	9.9986	22	38	8.9919	13	8.9940	13	1.0060	9.9979	22
39	8.9089	15	8.9103	15	1.0897	9.9986	21	39	8.9932	13	8.9953	13	1.0047	9.9979	21
40	8.9104	15	8.9118	16	1.0882	9.9986	20	40	8.9945	13	8.9966	13	1.0034	9.9979	20
41	8.9119	16	8.9134	15	1.0866	9.9985	19	41	8.9958	12	8.9979	13	1.0021	9.9979	19
42	8.9135	15	8.9150	15	1.0850	9.9985	18	42	8.9970	13	8.9992	13	1.0008	9.9978	18
43	8.9150	16	8.9165	15	1.0835	9.9985	17	43	8.9983	13	9.0005	12	0.9995	9.9978	17
44	8.9166	15	8.9180	16	1.0820	9.9985	16	44	8.9996	12	9.0017	13	0.9983	9.9978	16
45	8.9181	15	8.9196	15	1.0804	9.9985	15	45	9.0008	13	9.0030	13	0.9970	9.9978	15
46	8.9196	15	8.9211	15	1.0789	9.9985	14	46	9.0021	12	9.0043	12	0.9957	9.9978	14
47	8.9211	15	8.9226	15	1.0774	9.9985	13	47	9.0033	13	9.0055	12	0.9945	9.9978	13
48	8.9226	15	8.9241	15	1.0759	9.9985	12	48	9.0046	12	9.0068	12	0.9932	9.9978	12
49	8.9241	15	8.9256	16	1.0744	9.9985	11	49	9.0058	12	9.0080	13	0.9920	9.9978	11
50	8.9256	15	8.9272	15	1.0728	9.9985	10	50	9.0070	12	9.0093	13	0.9907	9.9977	10
51	8.9271	15	8.9287	15	1.0713	9.9984	9	51	9.0083	12	9.0105	12	0.9895	9.9977	9
52	8.9286	15	8.9302	14	1.0698	9.9984	8	52	9.0095	12	9.0118	12	0.9882	9.9977	8
53	8.9301	14	8.9316	15	1.0684	9.9984	7	53	9.0107	12	9.0130	13	0.9870	9.9977	7
54	8.9315	15	8.9331	15	1.0669	9.9984	6	54	9.0120	12	9.0143	12	0.9857	9.9977	6
55	8.9330	15	8.9346	15	1.0654	9.9984	5	55	9.0132	12	9.0155	12	0.9845	9.9977	5
56	8.9345	14	8.9361	15	1.0639	9.9984	4	56	9.0144	12	9.0167	12	0.9833	9.9977	4
57	8.9359	15	8.9376	14	1.0624	9.9984	3	57	9.0156	12	9.0180	12	0.9820	9.9977	3
58	8.9374	15	8.9390	15	1.0610	9.9984	2	58	9.0168	12	9.0192	12	0.9808	9.9976	2
59	8.9388	15	8.9405	15	1.0595	9.9984	1	59	9.0180	12	9.0204	12	0.9796	9.9976	1
60	8.9403	15	8.9420	15	1.0580	9.9983	0	60	9.0192	12	9.0216	12	0.9784	9.9976	0
/	cos.		cotg.		tang.	sin.	/	/	cos.		cotg.		tang.	sin.	/

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/	sin.		tang.		cotg.	cos.	/	/	sin.		tang.		cotg.	cos.	/
0	9. 0192	12	9. 0216	12	0. 9784	9. 9976	60	0	9. 0859	10	9. 0891	11	0. 9109	9. 9968	60
1	9. 0204	12	9. 0228	12	0. 9772	9. 9976	59	1	9. 0860	10	9. 0902	11	0. 9098	9. 9967	59
2	9. 0216	12	9. 0240	12	0. 9760	9. 9976	58	2	9. 0879	11	9. 0912	10	0. 9088	9. 9967	58
3	9. 0228	12	9. 0253	12	0. 9747	9. 9976	57	3	9. 0890	10	9. 0923	11	0. 9077	9. 9967	57
4	9. 0240	12	9. 0265	12	0. 9735	9. 9976	56	4	9. 0900	10	9. 0933	10	0. 9067	9. 9967	56
5	9. 0252	12	9. 0277	12	0. 9723	9. 9975	55	5	9. 0910	10	9. 0943	11	0. 9057	9. 9967	55
6	9. 0264	12	9. 0289	12	0. 9711	9. 9975	54	6	9. 0920	10	9. 0954	11	0. 9046	9. 9967	54
7	9. 0276	11	9. 0300	11	0. 9700	9. 9975	53	7	9. 0930	10	9. 0964	10	0. 9036	9. 9966	53
8	9. 0287	12	9. 0312	12	0. 9688	9. 9975	52	8	9. 0940	11	9. 0974	10	0. 9026	9. 9966	52
9	9. 0299	12	9. 0324	12	0. 9676	9. 9975	51	9	9. 0951	10	9. 0984	10	0. 9016	9. 9966	51
10	9. 0311	12	9. 0336	12	0. 9664	9. 9975	50	10	9. 0961	10	9. 0995	11	0. 9005	9. 9966	50
11	9. 0323	11	9. 0348	11	0. 9652	9. 9975	49	11	9. 0971	10	9. 1005	10	0. 8995	9. 9966	49
12	9. 0334	12	9. 0360	11	0. 9640	9. 9975	48	12	9. 0981	10	9. 1015	10	0. 8985	9. 9966	48
13	9. 0346	11	9. 0371	12	0. 9629	9. 9974	47	13	9. 0991	10	9. 1025	10	0. 8975	9. 9965	47
14	9. 0357	12	9. 0383	12	0. 9617	9. 9974	46	14	9. 1001	10	9. 1035	10	0. 8965	9. 9965	46
15	9. 0369	11	9. 0395	12	0. 9605	9. 9974	45	15	9. 1011	9	9. 1045	10	8. 8955	9. 9965	45
16	9. 0380	12	9. 0407	11	0. 9593	9. 9974	44	16	9. 1020	10	9. 1055	11	0. 8945	9. 9965	44
17	9. 0392	12	9. 0418	11	0. 9582	9. 9974	43	17	9. 1030	10	9. 1066	10	0. 8934	9. 9965	43
18	9. 0403	12	9. 0430	11	0. 9570	9. 9974	42	18	9. 1040	10	9. 1076	10	0. 8924	9. 9965	42
19	9. 0415	11	9. 0441	12	0. 9559	9. 9974	41	19	9. 1050	10	9. 1086	10	0. 8914	9. 9964	41
20	9. 0426	12	9. 0453	11	0. 9547	9. 9973	40	20	9. 1060	10	9. 1096	10	0. 8904	9. 9964	40
21	9. 0438	11	9. 0464	11	0. 9536	9. 9973	39	21	9. 1070	10	9. 1106	10	0. 8894	9. 9964	39
22	9. 0449	12	9. 0476	11	0. 9524	9. 9973	38	22	9. 1080	10	9. 1116	9	0. 8884	9. 9964	38
23	9. 0460	12	9. 0487	12	0. 9513	9. 9973	37	23	9. 1089	9	9. 1125	9	0. 8875	9. 9964	37
24	9. 0472	11	9. 0499	11	0. 9501	9. 9973	36	24	9. 1099	10	9. 1135	10	0. 8865	9. 9964	36
25	9. 0483	11	9. 0510	11	0. 9490	9. 9973	35	25	9. 1109	9	9. 1145	10	0. 8855	9. 9964	35
26	9. 0494	11	9. 0521	12	0. 9479	9. 9973	34	26	9. 1115	9	9. 1155	10	0. 8845	9. 9963	34
27	9. 0505	11	9. 0533	11	0. 9467	9. 9972	33	27	9. 1125	9	9. 1165	10	0. 8835	9. 9963	33
28	9. 0516	11	9. 0544	11	0. 9456	9. 9972	32	28	9. 1135	9	9. 1175	10	0. 8825	9. 9963	32
29	9. 0527	12	9. 0555	12	0. 9445	9. 9972	31	29	9. 1147	10	9. 1185	9	0. 8815	9. 9963	31
30	9. 0539	11	9. 0567	11	0. 9433	9. 9972	30	30	9. 1157	9	9. 1194	10	0. 8806	9. 9963	30
31	9. 0550	11	9. 0578	11	0. 9422	9. 9972	29	31	9. 1167	9	9. 1204	10	0. 8796	9. 9963	29
32	9. 0561	11	9. 0589	11	0. 9411	9. 9972	28	32	9. 1176	9	9. 1214	9	0. 8786	9. 9962	28
33	9. 0572	11	9. 0600	11	0. 9400	9. 9972	27	33	9. 1186	9	9. 1223	9	0. 8777	9. 9962	27
34	9. 0583	11	9. 0611	11	0. 9389	9. 9971	26	34	9. 1195	10	9. 1233	10	0. 8767	9. 9962	26
35	9. 0594	11	9. 0622	11	0. 9378	9. 9971	25	35	9. 1205	9	9. 1243	9	0. 8757	9. 9962	25
36	9. 0605	11	9. 0633	11	0. 9367	9. 9971	24	36	9. 1214	9	9. 1252	9	0. 8748	9. 9962	24
37	9. 0616	10	9. 0645	11	0. 9355	9. 9971	23	37	9. 1224	10	9. 1262	10	0. 8738	9. 9962	23
38	9. 0626	10	9. 0656	11	0. 9344	9. 9971	22	38	9. 1233	9	9. 1272	9	0. 8728	9. 9961	22
39	9. 0637	11	9. 0667	11	0. 9333	9. 9971	21	39	9. 1242	10	9. 1281	9	0. 8719	9. 9961	21
40	9. 0648	11	9. 0678	10	0. 9322	9. 9971	20	40	9. 1252	9	9. 1291	9	0. 8709	9. 9961	20
41	9. 0659	10	9. 0688	11	0. 9312	9. 9970	19	41	9. 1261	10	9. 1300	9	0. 8700	9. 9961	19
42	9. 0670	11	9. 0699	11	0. 9301	9. 9970	18	42	9. 1271	9	9. 1310	10	0. 8690	9. 9961	18
43	9. 0680	11	9. 0710	11	0. 9290	9. 9970	17	43	9. 1280	9	9. 1319	9	0. 8681	9. 9960	17
44	9. 0691	11	9. 0721	11	0. 9279	9. 9970	16	44	9. 1289	10	9. 1329	10	0. 8671	9. 9960	16
45	9. 0702	10	9. 0732	11	0. 9268	9. 9970	15	45	9. 1299	9	9. 1338	9	0. 8662	9. 9960	15
46	9. 0712	11	9. 0743	11	0. 9257	9. 9970	14	46	9. 1308	9	9. 1348	9	0. 8652	9. 9960	14
47	9. 0723	11	9. 0754	10	0. 9246	9. 9969	13	47	9. 1317	9	9. 1357	9	0. 8643	9. 9960	13
48	9. 0734	10	9. 0764	11	0. 9236	9. 9969	12	48	9. 1326	10	9. 1367	9	0. 8633	9. 9960	12
49	9. 0744	11	9. 0775	11	0. 9225	9. 9969	11	49	9. 1336	9	9. 1376	9	0. 8624	9. 9959	11
50	9. 0755	10	9. 0786	11	0. 9214	9. 9969	10	50	9. 1345	9	9. 1385	9	0. 8615	9. 9959	10
51	9. 0765	11	9. 0796	11	0. 9204	9. 9969	9	51	9. 1354	9	9. 1395	9	0. 8605	9. 9959	9
52	9. 0776	10	9. 0807	11	0. 9193	9. 9969	8	52	9. 1363	9	9. 1404	9	0. 8596	9. 9959	8
53	9. 0786	11	9. 0818	10	0. 9182	9. 9969	7	53	9. 1372	9	9. 1413	10	0. 8587	9. 9959	7
54	9. 0797	10	9. 0828	11	0. 9172	9. 9968	6	54	9. 1381	9	9. 1422	9	0. 8577	9. 9959	6
55	9. 0807	11	9. 0839	10	0. 9161	9. 9968	5	55	9. 1390	9	9. 1432	9	0. 8568	9. 9958	5
56	9. 0818	11	9. 0849	11	0. 9151	9. 9968	4	56	9. 1399	10	9. 1441	9	0. 8559	9. 9958	4
57	9. 0828	10	9. 0860	11	0. 9140	9. 9968	3	57	9. 1409	9	9. 1450	10	0. 8550	9. 9958	3
58	9. 0838	11	9. 0871	10	0. 9129	9. 9968	2	58	9. 1418	9	9. 1460	9	0. 8540	9. 9958	2
59	9. 0849	10	9. 0881	10	0. 9119	9. 9968	1	59	9. 1427	9	9. 1469	9	0. 8531	9. 9958	1
60	9. 0859		9. 0891		0. 9109	9. 9968	0	60	9. 1436		9. 1478		0. 8522	9. 9958	0
/	cos.		cotg.		tang.	sin.	/	/	cos.		cotg.		tang.	sin.	/

83°

82°

8°

9°

/	sin.		tang.		cotg.	cos.	/	/	sin.		tang.		cotg.	cos.	/
0	9.1436		9.1478		0.8522	9.9958	60	0	9.1943		9.1997		0.8003	9.9946	60
1	9.1445	9	9.1487	9	0.8513	9.9957	59	1	9.1951	8	9.2005	8	0.7995	9.9946	59
2	9.1453	9	9.1496	9	0.8504	9.9957	58	2	9.1959	8	9.2013	8	0.7987	9.9946	58
3	9.1462	9	9.1505	10	0.8495	9.9957	57	3	9.1967	8	9.2022	8	0.7978	9.9946	57
4	9.1471	9	9.1515	9	0.8485	9.9957	56	4	9.1975	8	9.2030	8	0.7970	9.9945	56
5	9.1480	9	9.1524	9	0.8476	9.9957	55	5	9.1983	8	9.2038	8	0.7962	9.9945	55
6	9.1489	9	9.1533	9	0.8467	9.9956	54	6	9.1991	8	9.2046	8	0.7954	9.9945	54
7	9.1498	9	9.1542	9	0.8458	9.9956	53	7	9.1999	8	9.2054	8	0.7946	9.9945	53
8	9.1507	9	9.1551	9	0.8449	9.9956	52	8	9.2007	8	9.2062	8	0.7938	9.9945	52
9	9.1516	9	9.1560	9	0.8440	9.9956	51	9	9.2015	7	9.2070	8	0.7930	9.9944	51
10	9.1525	8	9.1569	9	0.8431	9.9956	50	10	9.2022	8	9.2078	8	0.7922	9.9944	50
11	9.1533	9	9.1578	9	0.8422	9.9956	49	11	9.2030	8	9.2086	8	0.7914	9.9944	49
12	9.1542	9	9.1587	9	0.8413	9.9955	48	12	9.2038	8	9.2094	8	0.7906	9.9944	48
13	9.1551	9	9.1596	9	0.8404	9.9955	47	13	9.2046	8	9.2102	8	0.7898	9.9944	47
14	9.1560	8	9.1605	8	0.8395	9.9955	46	14	9.2054	7	9.2110	8	0.7890	9.9943	46
15	9.1568	8	9.1613	9	0.8387	9.9955	45	15	9.2061	8	9.2118	8	0.7882	9.9943	45
16	9.1577	8	9.1622	9	0.8378	9.9955	44	16	9.2069	8	9.2126	8	0.7874	9.9943	44
17	9.1586	8	9.1631	9	0.8369	9.9954	43	17	9.2077	8	9.2134	8	0.7866	9.9943	43
18	9.1594	8	9.1640	9	0.8360	9.9954	42	18	9.2085	7	9.2142	8	0.7858	9.9943	42
19	9.1603	9	9.1649	9	0.8351	9.9954	41	19	9.2092	8	9.2150	8	0.7850	9.9942	41
20	9.1612	8	9.1658	9	0.8342	9.9954	40	20	9.2100	8	9.2158	8	0.7842	9.9942	40
21	9.1620	8	9.1667	8	0.8333	9.9954	39	21	9.2108	7	9.2166	8	0.7834	9.9942	39
22	9.1629	8	9.1675	8	0.8325	9.9954	38	22	9.2115	8	9.2174	7	0.7826	9.9942	38
23	9.1637	9	9.1684	9	0.8316	9.9953	37	23	9.2123	8	9.2181	8	0.7819	9.9941	37
24	9.1646	9	9.1693	9	0.8307	9.9953	36	24	9.2131	7	9.2189	8	0.7811	9.9941	36
25	9.1655	8	9.1702	8	0.8298	9.9953	35	25	9.2138	8	9.2197	8	0.7803	9.9941	35
26	9.1663	8	9.1710	8	0.8290	9.9953	34	26	9.2146	7	9.2205	8	0.7795	9.9941	34
27	9.1672	8	9.1719	8	0.8281	9.9953	33	27	9.2153	8	9.2213	8	0.7787	9.9941	33
28	9.1680	8	9.1728	8	0.8272	9.9952	32	28	9.2161	8	9.2221	7	0.7779	9.9940	32
29	9.1689	8	9.1736	8	0.8264	9.9952	31	29	9.2169	7	9.2228	8	0.7772	9.9940	31
30	9.1697	8	9.1745	9	0.8255	9.9952	30	30	9.2176	7	9.2236	8	0.7764	9.9940	30
31	9.1705	8	9.1754	9	0.8246	9.9952	29	31	9.2184	8	9.2244	8	0.7756	9.9940	29
32	9.1714	8	9.1762	9	0.8238	9.9952	28	32	9.2191	8	9.2252	8	0.7748	9.9940	28
33	9.1722	8	9.1771	9	0.8229	9.9951	27	33	9.2199	7	9.2259	8	0.7741	9.9939	27
34	9.1731	8	9.1779	9	0.8221	9.9951	26	34	9.2206	8	9.2267	8	0.7733	9.9939	26
35	9.1739	8	9.1788	9	0.8212	9.9951	25	35	9.2214	7	9.2275	7	0.7725	9.9939	25
36	9.1747	8	9.1797	9	0.8203	9.9951	24	36	9.2221	7	9.2282	7	0.7718	9.9939	24
37	9.1756	8	9.1805	9	0.8195	9.9951	23	37	9.2229	7	9.2290	8	0.7710	9.9939	23
38	9.1764	8	9.1814	9	0.8186	9.9951	22	38	9.2236	7	9.2298	7	0.7702	9.9938	22
39	9.1772	9	9.1822	9	0.8178	9.9950	21	39	9.2243	8	9.2305	8	0.7695	9.9938	21
40	9.1781	8	9.1831	8	0.8169	9.9950	20	40	9.2251	7	9.2313	8	0.7687	9.9938	20
41	9.1789	8	9.1839	8	0.8161	9.9950	19	41	9.2258	7	9.2321	7	0.7679	9.9938	19
42	9.1797	9	9.1848	8	0.8152	9.9950	18	42	9.2266	7	9.2328	8	0.7672	9.9937	18
43	9.1806	8	9.1856	8	0.8144	9.9950	17	43	9.2273	7	9.2336	7	0.7664	9.9937	17
44	9.1814	8	9.1864	8	0.8136	9.9949	16	44	9.2280	8	9.2343	8	0.7657	9.9937	16
45	9.1822	8	9.1873	8	0.8127	9.9949	15	45	9.2288	7	9.2351	8	0.7649	9.9937	15
46	9.1830	8	9.1881	8	0.8119	9.9949	14	46	9.2295	7	9.2359	7	0.7641	9.9936	14
47	9.1838	8	9.1890	9	0.8110	9.9949	13	47	9.2303	7	9.2366	7	0.7634	9.9936	13
48	9.1847	8	9.1898	8	0.8102	9.9949	12	48	9.2310	7	9.2374	7	0.7626	9.9936	12
49	9.1855	8	9.1906	8	0.8094	9.9948	11	49	9.2317	7	9.2381	8	0.7619	9.9936	11
50	9.1863	8	9.1915	8	0.8085	9.9948	10	50	9.2324	7	9.2389	7	0.7611	9.9936	10
51	9.1871	8	9.1923	8	0.8077	9.9948	9	51	9.2332	7	9.2396	7	0.7604	9.9936	9
52	9.1879	8	9.1931	8	0.8069	9.9948	8	52	9.2339	7	9.2404	7	0.7596	9.9935	8
53	9.1887	8	9.1940	8	0.8060	9.9948	7	53	9.2346	7	9.2411	7	0.7589	9.9935	7
54	9.1895	8	9.1948	8	0.8052	9.9947	6	54	9.2353	7	9.2419	7	0.7581	9.9935	6
55	9.1903	8	9.1956	8	0.8044	9.9947	5	55	9.2361	8	9.2426	8	0.7574	9.9935	5
56	9.1911	8	9.1964	8	0.8036	9.9947	4	56	9.2368	7	9.2434	7	0.7566	9.9934	4
57	9.1919	8	9.1973	8	0.8027	9.9947	3	57	9.2375	7	9.2441	7	0.7559	9.9934	3
58	9.1927	8	9.1981	8	0.8019	9.9947	2	58	9.2382	7	9.2448	8	0.7552	9.9934	2
59	9.1935	8	9.1989	8	0.8011	9.9946	1	59	9.2390	7	9.2456	7	0.7544	9.9934	1
60	9.1943		9.1997		0.8003	9.9946	0	60	9.2397		9.2463		0.7537	9.9934	0
/	cos.		cotg.		tang.	sin.	/	/	cos.		cotg.		tang.	sin.	/

81°

80°

16° 0'—20° 0'

20° 0'—30° 0'

° /	sin.	tang.	cotg.	cos.	° /	° /	sin.	tang.	cotg.	cos.	° /
10 0	9.2397	9.2463	0.7537	9.9934	80 0	20 0	9.5341	9.5611	0.4389	9.9730	70 0
10 10	9.2468	9.2536	0.7464	9.9931	79 50	10 10	9.5375	9.5650	0.4350	9.9725	69 50
10 20	9.2538	9.2609	0.7391	9.9929	79 40	20 20	9.5409	9.5689	0.4311	9.9721	69 40
10 30	9.2606	9.2680	0.7320	9.9927	79 30	30 30	9.5443	9.5727	0.4273	9.9716	69 30
10 40	9.2674	9.2750	0.7250	9.9924	79 20	40 40	9.5477	9.5766	0.4234	9.9711	69 20
10 50	9.2740	9.2819	0.7181	9.9922	79 10	50 50	9.5510	9.5804	0.4196	9.9706	69 10
11 0	9.2806	9.2887	0.7113	9.9919	79 0	21 0	9.5543	9.5842	0.4158	9.9702	69 0
11 10	9.2870	9.2953	0.7047	9.9917	78 50	10 10	9.5576	9.5879	0.4121	9.9697	68 50
11 20	9.2934	9.3020	0.6980	9.9914	78 40	20 20	9.5609	9.5917	0.4083	9.9692	68 40
11 30	9.2997	9.3085	0.6915	9.9912	78 30	30 30	9.5641	9.5954	0.4046	9.9687	68 30
11 40	9.3058	9.3149	0.6851	9.9909	78 20	40 40	9.5673	9.5991	0.4009	9.9682	68 20
11 50	9.3119	9.3212	0.6785	9.9907	78 10	50 50	9.5704	9.6028	0.3972	9.9677	68 10
12 0	9.3179	9.3275	0.6725	9.9904	78 0	22 0	9.5736	9.6064	0.3936	9.9672	68 0
12 10	9.3238	9.3336	0.6664	9.9901	77 50	10 10	9.5767	9.6100	0.3900	9.9667	68 50
12 20	9.3296	9.3397	0.6603	9.9899	77 40	20 20	9.5798	9.6136	0.3864	9.9661	68 40
12 30	9.3353	9.3458	0.6543	9.9896	77 30	30 30	9.5828	9.6172	0.3828	9.9656	68 30
12 40	9.3410	9.3517	0.6483	9.9893	77 20	40 40	9.5859	9.6208	0.3792	9.9651	68 20
12 50	9.3466	9.3576	0.6424	9.9890	77 10	50 50	9.5889	9.6243	0.3757	9.9646	68 10
13 0	9.3521	9.3634	0.6366	9.9887	77 0	23 0	9.5919	9.6279	0.3721	9.9640	67 0
13 10	9.3575	9.3691	0.6309	9.9884	76 50	10 10	9.5948	9.6314	0.3686	9.9635	66 50
13 20	9.3629	9.3748	0.6252	9.9881	76 40	20 20	9.5978	9.6344	0.3652	9.9629	66 40
13 30	9.3682	9.3804	0.6196	9.9878	76 30	30 30	9.6007	9.6383	0.3617	9.9624	66 30
13 40	9.3734	9.3859	0.6141	9.9875	76 20	40 40	9.6036	9.6417	0.3583	9.9618	66 20
13 50	9.3786	9.3914	0.6086	9.9872	76 10	50 50	9.6065	9.6452	0.3548	9.9613	66 10
14 0	9.3837	9.3968	0.6032	9.9869	76 0	24 0	9.6093	9.6486	0.3514	9.9607	66 0
14 10	9.3887	9.4021	0.5979	9.9866	75 50	10 10	9.6121	9.6520	0.3480	9.9602	65 50
14 20	9.3937	9.4074	0.5926	9.9863	75 40	20 20	9.6149	9.6553	0.3447	9.9596	65 40
14 30	9.3986	9.4127	0.5873	9.9859	75 30	30 30	9.6177	9.6587	0.3413	9.9590	65 30
14 40	9.4035	9.4178	0.5822	9.9856	75 20	40 40	9.6205	9.6620	0.3380	9.9584	65 20
14 50	9.4083	9.4230	0.5770	9.9853	75 10	50 50	9.6232	9.6654	0.3346	9.9579	65 10
15 0	9.4130	9.4281	0.5719	9.9849	75 0	25 0	9.6259	9.6687	0.3313	9.9573	65 0
15 10	9.4177	9.4331	0.5669	9.9846	74 50	10 10	9.6286	9.6720	0.3280	9.9567	64 50
15 20	9.4223	9.4381	0.5619	9.9843	74 40	20 20	9.6313	9.6759	0.3248	9.9561	64 40
15 30	9.4269	9.4430	0.5570	9.9839	74 30	30 30	9.6340	9.6788	0.3215	9.9555	64 30
15 40	9.4314	9.4479	0.5521	9.9836	74 20	40 40	9.6366	9.6817	0.3183	9.9549	64 20
15 50	9.4359	9.4527	0.5473	9.9832	74 10	50 50	9.6392	9.6850	0.3150	9.9543	64 10
16 0	9.4403	9.4575	0.5425	9.9828	74 0	26 0	9.6418	9.6882	0.3118	9.9537	64 0
16 10	9.4447	9.4622	0.5378	9.9825	73 50	10 10	9.6444	9.6914	0.3086	9.9530	63 50
16 20	9.4491	9.4669	0.5331	9.9821	73 40	20 20	9.6470	9.6946	0.3054	9.9524	63 40
16 30	9.4533	9.4716	0.5284	9.9817	73 30	30 30	9.6495	9.6977	0.3023	9.9518	63 30
16 40	9.4576	9.4762	0.5238	9.9814	73 20	40 40	9.6521	9.7009	0.2991	9.9512	63 20
16 50	9.4618	9.4808	0.5192	9.9810	73 10	50 50	9.6546	9.7040	0.2960	9.9505	63 10
17 0	9.4659	9.4853	0.5147	9.9806	73 0	27 0	9.6570	9.7078	0.2928	9.9499	63 0
17 10	9.4700	9.4898	0.5102	9.9802	72 50	10 10	9.6595	9.7103	0.2897	9.9492	62 50
17 20	9.4741	9.4943	0.5057	9.9798	72 40	20 20	9.6620	9.7134	0.2866	9.9486	62 40
17 30	9.4781	9.4987	0.5013	9.9794	72 30	30 30	9.6644	9.7165	0.2835	9.9479	62 30
17 40	9.4821	9.5031	0.4969	9.9790	72 20	40 40	9.6668	9.7196	0.2804	9.9473	62 20
17 50	9.4861	9.5075	0.4925	9.9786	72 10	50 50	9.6692	9.7226	0.2774	9.9466	62 10
18 0	9.4900	9.5118	0.4882	9.9782	72 0	28 0	9.6716	9.7257	0.2743	9.9459	62 0
18 10	9.4939	9.5161	0.4839	9.9778	71 50	10 10	9.6740	9.7287	0.2713	9.9453	61 50
18 20	9.4977	9.5203	0.4797	9.9774	71 40	20 20	9.6763	9.7317	0.2683	9.9446	61 40
18 30	9.5015	9.5245	0.4755	9.9770	71 30	30 30	9.6787	9.7348	0.2652	9.9439	61 30
18 40	9.5052	9.5287	0.4713	9.9765	71 20	40 40	9.6810	9.7378	0.2622	9.9432	61 20
18 50	9.5090	9.5329	0.4671	9.9761	71 10	50 50	9.6833	9.7408	0.2592	9.9425	61 10
19 0	9.5126	9.5370	0.4630	9.9757	71 0	29 0	9.6856	9.7438	0.2562	9.9418	61 0
19 10	9.5163	9.5411	0.4589	9.9752	70 50	10 10	9.6878	9.7467	0.2533	9.9411	60 50
19 20	9.5199	9.5451	0.4549	9.9748	70 40	20 20	9.6901	9.7497	0.2503	9.9404	60 40
19 30	9.5235	9.5491	0.4509	9.9743	70 30	30 30	9.6923	9.7526	0.2474	9.9397	60 30
19 40	9.5270	9.5531	0.4469	9.9739	70 20	40 40	9.6946	9.7556	0.2444	9.9390	60 20
19 50	9.5306	9.5571	0.4429	9.9734	70 10	50 50	9.6968	9.7585	0.2415	9.9383	60 10
20 0	9.5341	9.5611	0.4389	9.9730	70 0	30 0	9.6990	9.7614	0.2386	9.9375	60 0
° /	cos.	cotg.	tang.	sin.	° /	° /	cos.	cotg.	tang.	sin.	° /

70° 0'—80° 0'

60° 0'—70° 0'

30° 0' — 40° 0'

40° 0' — 45° 0'

° /	sin.	tang.	cotg.	cos.	° /	° /	sin.	tang.	cotg.	cos.	° /
30° 0'	9.6990	9.7614	0.2386	9.9375	60° 0'	40° 0'	9.8081	9.9238	0.0762	9.8843	50° 0'
10	9.7012	9.7644	0.2356	9.9368	59 50	10	9.8096	9.9264	0.0736	9.8832	49 50
20	9.7033	9.7673	0.2327	9.9361	40	20	9.8111	9.9289	0.0711	9.8821	49 40
30	9.7055	9.7701	0.2299	9.9353	30	30	9.8125	9.9313	0.0685	9.8810	49 30
40	9.7076	9.7730	0.2270	9.9346	20	40	9.8140	9.9341	0.0659	9.8800	49 20
30 50	9.7097	9.7759	0.2241	9.9338	10	40 50	9.8155	9.9366	0.0634	9.8789	49 10
31 0	9.7118	9.7788	0.2212	9.9331	59 0	41 0	9.8169	9.9392	0.0608	9.8778	49 0
10	9.7139	9.7816	0.2184	9.9323	58 50	10	9.8184	9.9417	0.0583	9.8767	48 50
20	9.7160	9.7845	0.2155	9.9315	40	20	9.8198	9.9443	0.0557	9.8756	48 40
30	9.7181	9.7873	0.2127	9.9308	30	30	9.8213	9.9468	0.0532	9.8745	48 30
40	9.7201	9.7902	0.2098	9.9300	20	40	9.8227	9.9494	0.0506	9.8733	48 20
31 50	9.7222	9.7930	0.2070	9.9292	10	41 50	9.8241	9.9519	0.0481	9.8722	48 10
32 0	9.7242	9.7958	0.2042	9.9284	58 0	42 0	9.8255	9.9544	0.0456	9.8711	48 0
10	9.7263	9.7986	0.2014	9.9276	57 50	10	9.8269	9.9570	0.0430	9.8699	47 50
20	9.7282	9.8014	0.1986	9.9268	40	20	9.8283	9.9595	0.0405	9.8688	47 40
30	9.7303	9.8042	0.1958	9.9260	30	30	9.8297	9.9621	0.0379	9.8676	47 30
40	9.7323	9.8070	0.1930	9.9252	20	40	9.8311	9.9646	0.0354	9.8665	47 20
32 50	9.7342	9.8097	0.1903	9.9244	10	42 50	9.8324	9.9671	0.0329	9.8653	47 10
33 0	9.7361	9.8125	0.1875	9.9236	57 0	43 0	9.8338	9.9697	0.0303	9.8641	47 0
10	9.7380	9.8153	0.1847	9.9228	56 50	10	9.8351	9.9722	0.0278	9.8629	46 50
20	9.7400	9.8180	0.1820	9.9219	40	20	9.8365	9.9747	0.0253	9.8618	46 40
30	9.7419	9.8208	0.1792	9.9211	30	30	9.8378	9.9772	0.0228	9.8606	46 30
40	9.7438	9.8235	0.1765	9.9203	20	40	9.8391	9.9798	0.0202	9.8594	46 20
33 50	9.7457	9.8263	0.1737	9.9194	10	43 50	9.8405	9.9823	0.0177	9.8582	46 10
34 0	9.7476	9.8290	0.1710	9.9186	56 0	44 0	9.8418	9.9848	0.0152	9.8569	46 0
10	9.7494	9.8317	0.1683	9.9177	55 50	10	9.8431	9.9874	0.0126	9.8557	45 50
20	9.7513	9.8344	0.1656	9.9169	40	20	9.8444	9.9899	0.0101	9.8545	45 40
30	9.7531	9.8371	0.1629	9.9160	30	30	9.8457	9.9924	0.0076	9.8532	45 30
40	9.7550	9.8398	0.1602	9.9151	20	40	9.8469	9.9949	0.0051	9.8520	45 20
34 50	9.7568	9.8425	0.1575	9.9142	10	44 50	9.8482	9.9975	0.0025	9.8507	45 10
35 0	9.7586	9.8452	0.1548	9.9134	55 0	45 0	9.8495	0.0000	0.0000	9.8495	45 0
10	9.7604	9.8479	0.1521	9.9125	54 50	° /	cos.	cotg.	tang.	sin.	° /
20	9.7622	9.8506	0.1494	9.9116	40						
30	9.7640	9.8533	0.1467	9.9107	30						
40	9.7657	9.8559	0.1441	9.9098	20						
35 50	9.7675	9.8586	0.1414	9.9089	10						
36 0	9.7692	9.8613	0.1387	9.9080	54 0						
10	9.7710	9.8639	0.1361	9.9070	53 50						
20	9.7727	9.8666	0.1334	9.9061	40						
30	9.7744	9.8692	0.1308	9.9052	30						
40	9.7761	9.8718	0.1282	9.9042	20						
36 50	9.7778	9.8745	0.1255	9.9033	10						
37 0	9.7795	9.8771	0.1229	9.9023	53 0						
10	9.7811	9.8797	0.1203	9.9014	52 50						
20	9.7828	9.8824	0.1176	9.9004	40						
30	9.7844	9.8850	0.1150	9.8995	30						
40	9.7861	9.8876	0.1124	9.8985	20						
37 50	9.7877	9.8902	0.1098	9.8975	10						
38 0	9.7893	9.8928	0.1072	9.8965	52 0						
10	9.7910	9.8954	0.1046	9.8955	51 50						
20	9.7926	9.8980	0.1020	9.8945	40						
30	9.7941	9.9006	0.0994	9.8935	30						
40	9.7957	9.9032	0.0968	9.8925	20						
38 50	9.7973	9.9058	0.0942	9.8915	10						
39 0	9.7989	9.9084	0.0916	9.8905	51 0						
10	9.8004	9.9110	0.0890	9.8895	50 50						
20	9.8020	9.9135	0.0865	9.8884	40						
30	9.8035	9.9161	0.0839	9.8874	30						
40	9.8050	9.9187	0.0813	9.8864	20						
39 50	9.8066	9.9212	0.0788	9.8853	10						
40 0	9.8081	9.9238	0.0762	9.8843	50 0						
° /	cos.	cotg.	tang.	sin.	° /						

50° 0' — 60° 0'

45° 0' — 50° 0'

TRAVERSE-TABLES.

Traverse-Table for a Distance = 1.

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
0 0	1.0000	.0000	90 0	2 0	.9994	.0349	88 0	4 0	.9976	.0698	86 0
2	1.0000	.0006	58	2	.9994	.0355	58	2	.9975	.0703	58
4	1.0000	.0012	56	4	.9993	.0361	56	4	.9975	.0709	56
6	1.0000	.0017	54	6	.9993	.0366	54	6	.9974	.0715	54
8	1.0000	.0023	52	8	.9993	.0372	52	8	.9974	.0721	52
10	1.0000	.0029	50	10	.9993	.0378	50	10	.9974	.0727	50
12	1.0000	.0035	48	12	.9993	.0384	48	12	.9973	.0732	48
14	1.0000	.0041	46	14	.9992	.0390	46	14	.9973	.0738	46
16	1.0000	.0047	44	16	.9992	.0396	44	16	.9972	.0744	44
18	1.0000	.0052	42	18	.9992	.0401	42	18	.9972	.0750	42
20	1.0000	.0058	40	20	.9992	.0407	40	20	.9971	.0756	40
22	1.0000	.0064	38	22	.9991	.0413	38	22	.9971	.0761	38
24	1.0000	.0070	36	24	.9991	.0419	36	24	.9971	.0767	36
26	1.0000	.0076	34	26	.9991	.0425	34	26	.9970	.0773	34
28	1.0000	.0081	32	28	.9991	.0430	32	28	.9970	.0779	32
30	1.0000	.0087	30	30	.9990	.0436	30	30	.9969	.0785	30
32	1.0000	.0093	28	32	.9990	.0442	28	32	.9969	.0790	28
34	1.0000	.0099	26	34	.9990	.0448	26	34	.9968	.0796	26
36	.9999	.0105	24	36	.9990	.0454	24	36	.9968	.0802	24
38	.9999	.0111	22	38	.9989	.0459	22	38	.9967	.0808	22
40	.9999	.0116	20	40	.9989	.0465	20	40	.9967	.0814	20
42	.9999	.0122	18	42	.9989	.0471	18	42	.9966	.0819	18
44	.9999	.0128	16	44	.9989	.0477	16	44	.9966	.0825	16
46	.9999	.0134	14	46	.9988	.0483	14	46	.9965	.0831	14
48	.9999	.0140	12	48	.9988	.0488	12	48	.9965	.0837	12
50	.9999	.0145	10	50	.9988	.0494	10	50	.9964	.0843	10
52	.9999	.0151	8	52	.9987	.0500	8	52	.9964	.0848	8
54	.9999	.0157	6	54	.9987	.0506	6	54	.9963	.0854	6
56	.9999	.0163	4	56	.9987	.0512	4	56	.9963	.0860	4
58	.9999	.0169	2	58	.9987	.0518	2	58	.9962	.0866	2
1 0	.9998	.0175	89 0	3 0	.9986	.0523	87 0	5 0	.9962	.0872	85 0
2	.9998	.0180	58	2	.9986	.0529	58	2	.9961	.0877	58
4	.9998	.0186	56	4	.9986	.0535	56	4	.9961	.0883	56
6	.9998	.0192	54	6	.9985	.0541	54	6	.9960	.0889	54
8	.9998	.0198	52	8	.9985	.0547	52	8	.9960	.0895	52
10	.9998	.0204	50	10	.9985	.0552	50	10	.9959	.0901	50
12	.9998	.0209	48	12	.9984	.0558	48	12	.9959	.0906	48
14	.9998	.0215	46	14	.9984	.0564	46	14	.9958	.0912	46
16	.9998	.0221	44	16	.9984	.0570	44	16	.9958	.0918	44
18	.9997	.0227	42	18	.9983	.0576	42	18	.9957	.0924	42
20	.9997	.0233	40	20	.9983	.0581	40	20	.9957	.0929	40
22	.9997	.0239	38	22	.9983	.0587	38	22	.9956	.0935	38
24	.9997	.0244	36	24	.9982	.0593	36	24	.9956	.0941	36
26	.9997	.0250	34	26	.9982	.0599	34	26	.9955	.0947	34
28	.9997	.0256	32	28	.9982	.0605	32	28	.9955	.0953	32
30	.9997	.0262	30	30	.9981	.0610	30	30	.9954	.0958	30
32	.9996	.0268	28	32	.9981	.0616	28	32	.9953	.0964	28
34	.9996	.0273	26	34	.9981	.0622	26	34	.9953	.0970	26
36	.9996	.0279	24	36	.9980	.0628	24	36	.9952	.0976	24
38	.9996	.0285	22	38	.9980	.0634	22	38	.9952	.0982	22
40	.9996	.0291	20	40	.9980	.0640	20	40	.9951	.0987	20
42	.9996	.0297	18	42	.9979	.0645	18	42	.9951	.0993	18
44	.9996	.0302	16	44	.9979	.0651	16	44	.9950	.0999	16
46	.9995	.0308	14	46	.9978	.0657	14	46	.9949	.1005	14
48	.9995	.0314	12	48	.9978	.0663	12	48	.9949	.1011	12
50	.9995	.0320	10	50	.9978	.0669	10	50	.9948	.1016	10
52	.9995	.0326	8	52	.9977	.0674	8	52	.9948	.1022	8
54	.9995	.0332	6	54	.9977	.0680	6	54	.9947	.1028	6
56	.9994	.0337	4	56	.9976	.0686	4	56	.9946	.1034	4
58	.9994	.0343	2	58	.9976	.0692	2	58	.9946	.1039	2
2 0	.9994	.0349	88 0	4 0	.9976	.0698	86 0	6 0	.9945	.1045	84 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
6 0	.9945	.1045	84 0	8 0	.9903	.1392	82 0	10 0	.9848	.1736	80 0
2	.9945	.1051	58	2	.9902	.1397	58	2	.9847	.1742	58
4	.9944	.1057	56	4	.9901	.1403	56	4	.9846	.1748	56
6	.9943	.1063	54	6	.9900	.1409	54	6	.9845	.1754	54
8	.9943	.1068	52	8	.9899	.1415	52	8	.9844	.1759	52
10	.9942	.1074	50	10	.9899	.1421	50	10	.9843	.1765	50
12	.9942	.1080	48	12	.9898	.1426	48	12	.9842	.1771	48
14	.9941	.1086	46	14	.9897	.1432	46	14	.9841	.1777	46
16	.9940	.1092	44	16	.9896	.1438	44	16	.9840	.1782	44
18	.9940	.1097	42	18	.9895	.1444	42	18	.9839	.1788	42
20	.9939	.1103	40	20	.9894	.1449	40	20	.9838	.1794	40
22	.9938	.1109	38	22	.9894	.1455	38	22	.9837	.1799	38
24	.9938	.1115	36	24	.9893	.1461	36	24	.9836	.1805	36
26	.9937	.1120	34	26	.9892	.1467	34	26	.9835	.1811	34
28	.9936	.1126	32	28	.9891	.1472	32	28	.9834	.1817	32
30	.9936	.1132	30	30	.9890	.1478	30	30	.9833	.1822	30
32	.9935	.1138	28	32	.9889	.1484	28	32	.9831	.1828	28
34	.9934	.1144	26	34	.9888	.1490	26	34	.9830	.1834	26
36	.9934	.1149	24	36	.9888	.1495	24	36	.9829	.1840	24
38	.9933	.1155	22	38	.9887	.1501	22	38	.9828	.1845	22
40	.9932	.1161	20	40	.9886	.1507	20	40	.9827	.1851	20
42	.9932	.1167	18	42	.9885	.1513	18	42	.9826	.1857	18
44	.9931	.1172	16	44	.9884	.1518	16	44	.9825	.1862	16
46	.9930	.1178	14	46	.9883	.1524	14	46	.9824	.1868	14
48	.9930	.1184	12	48	.9882	.1530	12	48	.9823	.1874	12
50	.9929	.1190	10	50	.9881	.1536	10	50	.9822	.1880	10
52	.9928	.1196	8	52	.9880	.1541	8	52	.9821	.1885	8
54	.9928	.1201	6	54	.9880	.1547	6	54	.9820	.1891	6
56	.9927	.1207	4	56	.9879	.1553	4	56	.9818	.1897	4
58	.9926	.1213	2	58	.9878	.1559	2	58	.9817	.1902	2
7 0	.9925	.1219	83 0	9 0	.9877	.1564	81 0	11 0	.9816	.1908	79 0
2	.9925	.1224	58	2	.9876	.1570	58	2	.9815	.1914	58
4	.9924	.1230	56	4	.9875	.1576	56	4	.9814	.1920	56
6	.9923	.1236	54	6	.9874	.1582	54	6	.9813	.1925	54
8	.9923	.1242	52	8	.9873	.1587	52	8	.9812	.1931	52
10	.9922	.1248	50	10	.9872	.1593	50	10	.9811	.1937	50
12	.9921	.1253	48	12	.9871	.1599	48	12	.9810	.1942	48
14	.9920	.1259	46	14	.9870	.1605	46	14	.9808	.1948	46
16	.9920	.1265	44	16	.9869	.1610	44	16	.9807	.1954	44
18	.9919	.1271	42	18	.9869	.1616	42	18	.9806	.1959	42
20	.9918	.1276	40	20	.9868	.1622	40	20	.9805	.1965	40
22	.9917	.1282	38	22	.9867	.1628	38	22	.9804	.1971	38
24	.9917	.1288	36	24	.9866	.1633	36	24	.9803	.1977	36
26	.9916	.1294	34	26	.9865	.1639	34	26	.9802	.1982	34
28	.9915	.1299	32	28	.9864	.1645	32	28	.9800	.1988	32
30	.9914	.1305	30	30	.9863	.1650	30	30	.9799	.1994	30
32	.9914	.1311	28	32	.9862	.1656	28	32	.9798	.1999	28
34	.9913	.1317	26	34	.9861	.1662	26	34	.9797	.2005	26
36	.9912	.1323	24	36	.9860	.1668	24	36	.9796	.2011	24
38	.9911	.1328	22	38	.9859	.1673	22	38	.9795	.2016	22
40	.9911	.1334	20	40	.9858	.1679	20	40	.9793	.2022	20
42	.9910	.1340	18	42	.9857	.1685	18	42	.9792	.2028	18
44	.9909	.1346	16	44	.9856	.1691	16	44	.9791	.2034	16
46	.9908	.1351	14	46	.9855	.1696	14	46	.9790	.2039	14
48	.9907	.1357	12	48	.9854	.1702	12	48	.9789	.2045	12
50	.9907	.1363	10	50	.9853	.1708	10	50	.9787	.2051	10
52	.9906	.1369	8	52	.9852	.1714	8	52	.9786	.2056	8
54	.9905	.1374	6	54	.9851	.1719	6	54	.9785	.2062	6
56	.9904	.1380	4	56	.9850	.1725	4	56	.9784	.2068	4
58	.9903	.1386	2	58	.9849	.1731	2	58	.9783	.2073	2
8 0	.9903	.1392	82 0	10 0	.9848	.1736	80 0	12 0	.9781	.2079	78 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or E. W.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
12 0	.9781	.2079	78 0	14 0	.9703	.2419	76 0	16 0	.9613	.2756	74 0
2	.9780	.2084	58	2	.9702	.2425	58	2	.9611	.2762	58
4	.9779	.2090	56	4	.9700	.2431	56	4	.9609	.2768	56
6	.9778	.2096	54	6	.9699	.2436	54	6	.9608	.2773	54
8	.9777	.2102	52	8	.9697	.2442	52	8	.9606	.2779	52
10	.9775	.2108	50	10	.9696	.2447	50	10	.9605	.2784	50
12	.9774	.2113	48	12	.9694	.2453	48	12	.9603	.2790	48
14	.9773	.2119	46	14	.9693	.2459	46	14	.9601	.2795	46
16	.9772	.2125	44	16	.9692	.2464	44	16	.9600	.2801	44
18	.9770	.2130	42	18	.9690	.2470	42	18	.9598	.2807	42
20	.9769	.2136	40	20	.9689	.2476	40	20	.9596	.2812	40
22	.9768	.2142	38	22	.9687	.2481	38	22	.9595	.2818	38
24	.9767	.2147	36	24	.9686	.2487	36	24	.9593	.2823	36
26	.9765	.2153	34	26	.9684	.2493	34	26	.9591	.2829	34
28	.9764	.2159	32	28	.9683	.2498	32	28	.9590	.2835	32
30	.9763	.2164	30	30	.9681	.2504	30	30	.9588	.2840	30
32	.9762	.2170	28	32	.9680	.2509	28	32	.9587	.2846	28
34	.9760	.2176	26	34	.9679	.2515	26	34	.9585	.2851	26
36	.9759	.2181	24	36	.9677	.2521	24	36	.9583	.2857	24
38	.9758	.2187	22	38	.9676	.2526	22	38	.9582	.2862	22
40	.9757	.2193	20	40	.9674	.2532	20	40	.9580	.2868	20
42	.9755	.2198	18	42	.9673	.2538	18	42	.9578	.2874	18
44	.9754	.2204	16	44	.9671	.2543	16	44	.9577	.2879	16
46	.9753	.2210	14	46	.9670	.2549	14	46	.9575	.2885	14
48	.9751	.2215	12	48	.9668	.2554	12	48	.9573	.2890	12
50	.9750	.2221	10	50	.9667	.2560	10	50	.9572	.2896	10
52	.9749	.2227	8	52	.9665	.2566	8	52	.9570	.2901	8
54	.9748	.2232	6	54	.9664	.2571	6	54	.9568	.2907	6
56	.9746	.2238	4	56	.9662	.2577	4	56	.9566	.2913	4
58	.9745	.2244	2	58	.9661	.2583	2	58	.9565	.2918	2
13 0	.9744	.2250	77 0	15 0	.9659	.2588	75 0	17 0	.9563	.2924	73 0
2	.9742	.2255	58	2	.9658	.2594	58	2	.9561	.2929	58
4	.9741	.2261	56	4	.9656	.2599	56	4	.9560	.2935	56
6	.9740	.2267	54	6	.9655	.2605	54	6	.9558	.2940	54
8	.9738	.2272	52	8	.9653	.2611	52	8	.9556	.2946	52
10	.9737	.2278	50	10	.9652	.2616	50	10	.9555	.2952	50
12	.9736	.2284	48	12	.9650	.2622	48	12	.9553	.2957	48
14	.9734	.2289	46	14	.9649	.2628	46	14	.9551	.2963	46
16	.9733	.2295	44	16	.9647	.2633	44	16	.9549	.2968	44
18	.9732	.2300	42	18	.9646	.2639	42	18	.9548	.2974	42
20	.9730	.2306	40	20	.9644	.2644	40	20	.9546	.2979	40
22	.9729	.2312	38	22	.9642	.2650	38	22	.9544	.2985	38
24	.9728	.2317	36	24	.9641	.2656	36	24	.9542	.2990	36
26	.9726	.2323	34	26	.9639	.2661	34	26	.9541	.2996	34
28	.9725	.2329	32	28	.9638	.2667	32	28	.9539	.3002	32
30	.9724	.2334	30	30	.9636	.2672	30	30	.9537	.3007	30
32	.9722	.2340	28	32	.9625	.2678	28	32	.9535	.3013	28
34	.9721	.2346	26	34	.9623	.2684	26	34	.9534	.3018	26
36	.9720	.2351	24	36	.9622	.2689	24	36	.9532	.3024	24
38	.9718	.2357	22	38	.9620	.2695	22	38	.9530	.3029	22
40	.9717	.2363	20	40	.9618	.2700	20	40	.9528	.3035	20
42	.9715	.2368	18	42	.9617	.2706	18	42	.9527	.3040	18
44	.9714	.2374	16	44	.9615	.2712	16	44	.9525	.3046	16
46	.9713	.2380	14	46	.9614	.2717	14	46	.9523	.3051	14
48	.9711	.2385	12	48	.9612	.2723	12	48	.9521	.3057	12
50	.9710	.2391	10	50	.9611	.2728	10	50	.9520	.3062	10
52	.9709	.2397	8	52	.9619	.2734	8	52	.9518	.3068	8
54	.9707	.2402	6	54	.9617	.2740	6	54	.9516	.3074	6
56	.9706	.2408	4	56	.9616	.2745	4	56	.9514	.3079	4
58	.9704	.2414	2	58	.9614	.2751	2	58	.9512	.3085	2
14 0	.9703	.2419	76 0	16 0	.9613	.2756	74 0	18 0	.9511	.3090	72 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
18 0	.9511	.3090	72 0	20 0	.9397	.3420	70 0	22 0	.9272	.3746	68 0
2	.9509	.3096	58	2	.9395	.3426	58	2	.9270	.3751	58
4	.9507	.3101	56	4	.9393	.3431	56	4	.9267	.3757	56
6	.9505	.3107	54	6	.9391	.3437	54	6	.9265	.3762	54
8	.9503	.3112	52	8	.9389	.3442	52	8	.9263	.3768	52
10	.9502	.3118	50	10	.9387	.3448	50	10	.9261	.3773	50
12	.9500	.3123	48	12	.9385	.3453	48	12	.9259	.3778	48
14	.9498	.3129	46	14	.9383	.3458	46	14	.9257	.3784	46
16	.9496	.3134	44	16	.9381	.3464	44	16	.9254	.3789	44
18	.9494	.3140	42	18	.9379	.3469	42	18	.9252	.3795	42
20	.9492	.3145	40	20	.9377	.3475	40	20	.9250	.3800	40
22	.9491	.3151	38	22	.9375	.3480	38	22	.9248	.3805	38
24	.9489	.3156	36	24	.9373	.3486	36	24	.9245	.3811	36
26	.9487	.3162	34	26	.9371	.3491	34	26	.9243	.3816	34
28	.9485	.3168	32	28	.9369	.3497	32	28	.9241	.3821	32
30	.9483	.3173	30	30	.9367	.3502	30	30	.9239	.3827	30
32	.9481	.3179	28	32	.9365	.3508	28	32	.9237	.3832	28
34	.9480	.3184	26	34	.9363	.3513	26	34	.9234	.3838	26
36	.9478	.3190	24	36	.9361	.3518	24	36	.9232	.3843	24
38	.9476	.3195	22	38	.9359	.3524	22	38	.9230	.3848	22
40	.9474	.3201	20	40	.9356	.3529	20	40	.9228	.3854	20
42	.9472	.3206	18	42	.9354	.3535	18	42	.9225	.3859	18
44	.9470	.3212	16	44	.9352	.3540	16	44	.9223	.3864	16
46	.9468	.3217	14	46	.9350	.3546	14	46	.9221	.3870	14
48	.9466	.3223	12	48	.9348	.3551	12	48	.9219	.3875	12
50	.9465	.3228	10	50	.9346	.3557	10	50	.9216	.3881	10
52	.9463	.3234	8	52	.9344	.3562	8	52	.9214	.3886	8
54	.9461	.3239	6	54	.9342	.3567	6	54	.9212	.3891	6
56	.9459	.3245	4	56	.9340	.3573	4	56	.9210	.3897	4
58	.9457	.3250	2	58	.9338	.3578	2	58	.9207	.3902	2
19 0	.9455	.3256	71 0	21 0	.9336	.3584	69 0	23 0	.9205	.3907	67 0
2	.9453	.3261	58	2	.9334	.3589	58	2	.9203	.3913	58
4	.9451	.3267	56	4	.9332	.3595	56	4	.9200	.3918	56
6	.9449	.3272	54	6	.9330	.3600	54	6	.9198	.3923	54
8	.9448	.3278	52	8	.9327	.3605	52	8	.9196	.3929	52
10	.9446	.3283	50	10	.9325	.3611	50	10	.9194	.3934	50
12	.9444	.3289	48	12	.9323	.3616	48	12	.9191	.3939	48
14	.9442	.3294	46	14	.9321	.3622	46	14	.9189	.3945	46
16	.9440	.3300	44	16	.9319	.3627	44	16	.9187	.3950	44
18	.9438	.3305	42	18	.9317	.3633	42	18	.9184	.3955	42
20	.9436	.3311	40	20	.9315	.3638	40	20	.9182	.3961	40
22	.9434	.3316	38	22	.9313	.3643	38	22	.9180	.3966	38
24	.9432	.3322	36	24	.9311	.3649	36	24	.9178	.3971	36
26	.9430	.3327	34	26	.9308	.3654	34	26	.9175	.3977	34
28	.9428	.3333	32	28	.9306	.3660	32	28	.9173	.3982	32
30	.9426	.3338	30	30	.9304	.3665	30	30	.9171	.3987	30
32	.9424	.3344	28	32	.9302	.3670	28	32	.9168	.3993	28
34	.9423	.3349	26	34	.9300	.3676	26	34	.9166	.3998	26
36	.9421	.3355	24	36	.9298	.3681	24	36	.9164	.4003	24
38	.9419	.3360	22	38	.9296	.3687	22	38	.9161	.4009	22
40	.9417	.3365	20	40	.9293	.3692	20	40	.9159	.4014	20
42	.9415	.3371	18	42	.9291	.3697	18	42	.9157	.4019	18
44	.9413	.3376	16	44	.9289	.3703	16	44	.9154	.4025	16
46	.9411	.3382	14	46	.9287	.3708	14	46	.9152	.4030	14
48	.9409	.3387	12	48	.9285	.3714	12	48	.9150	.4035	12
50	.9407	.3393	10	50	.9283	.3719	10	50	.9147	.4041	10
52	.9405	.3398	8	52	.9281	.3724	8	52	.9145	.4046	8
54	.9403	.3404	6	54	.9278	.3730	6	54	.9143	.4051	6
56	.9401	.3409	4	56	.9276	.3735	4	56	.9140	.4057	4
58	.9399	.3415	2	58	.9274	.3741	2	58	.9138	.4062	2
20 0	.9397	.3420	70 0	22 0	.9272	.3746	68 0	24 0	.9135	.4067	66 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	°	° /	Lat. or N. S.	Dep. or E. W.	° /
24 0	.9135	.4067	66 0	26 0	.8988	.4384	64 0	28 0	.8829	.4695	62 0
2	.9133	.4073	58	2	.8985	.4389	58	2	.8827	.4700	58
4	.9131	.4078	56	4	.8983	.4394	56	4	.8824	.4705	56
6	.9128	.4083	54	6	.8980	.4399	54	6	.8821	.4710	54
8	.9126	.4089	52	8	.8978	.4405	52	8	.8819	.4715	52
10	.9124	.4094	50	10	.8975	.4410	50	10	.8816	.4720	50
12	.9121	.4099	48	12	.8973	.4415	48	12	.8813	.4726	48
14	.9119	.4105	46	14	.8970	.4420	46	14	.8810	.4731	46
16	.9116	.4110	44	16	.8967	.4425	44	16	.8808	.4736	44
18	.9114	.4115	42	18	.8965	.4431	42	18	.8805	.4741	42
20	.9112	.4120	40	20	.8962	.4436	40	20	.8802	.4746	40
22	.9109	.4126	38	22	.8960	.4441	38	22	.8799	.4751	38
24	.9107	.4131	36	24	.8957	.4446	36	24	.8796	.4756	36
26	.9104	.4136	34	26	.8955	.4452	34	26	.8794	.4761	34
28	.9102	.4142	32	28	.8952	.4457	32	28	.8791	.4766	32
30	.9100	.4147	30	30	.8949	.4462	30	30	.8788	.4772	30
32	.9097	.4152	28	32	.8947	.4467	28	32	.8785	.4777	28
34	.9095	.4158	26	34	.8944	.4472	26	34	.8783	.4782	26
36	.9092	.4163	24	36	.8942	.4478	24	36	.8780	.4787	24
38	.9090	.4168	22	38	.8939	.4483	22	38	.8777	.4792	22
40	.9088	.4173	20	40	.8936	.4488	20	40	.8774	.4797	20
42	.9085	.4179	18	42	.8934	.4493	18	42	.8771	.4802	18
44	.9083	.4184	16	44	.8931	.4498	16	44	.8769	.4807	16
46	.9080	.4189	14	46	.8928	.4504	14	46	.8766	.4812	14
48	.9078	.4195	12	48	.8926	.4509	12	48	.8763	.4818	12
50	.9075	.4200	10	50	.8923	.4514	10	50	.8760	.4823	10
52	.9073	.4205	8	52	.8921	.4519	8	52	.8757	.4828	8
54	.9070	.4210	6	54	.8918	.4524	6	54	.8755	.4833	6
56	.9068	.4216	4	56	.8915	.4530	4	56	.8752	.4838	4
58	.9066	.4221	2	58	.8913	.4535	2	58	.8749	.4843	2
25 0	.9063	.4226	65 0	27 0	.8910	.4540	63 0	29 0	.8746	.4848	61 0
2	.9061	.4231	58	2	.8907	.4545	58	2	.8743	.4853	58
4	.9058	.4237	56	4	.8905	.4550	56	4	.8741	.4858	56
6	.9056	.4242	54	6	.8902	.4555	54	6	.8738	.4863	54
8	.9053	.4247	52	8	.8899	.4561	52	8	.8735	.4868	52
10	.9051	.4253	50	10	.8897	.4566	50	10	.8732	.4874	50
12	.9048	.4258	48	12	.8894	.4571	48	12	.8729	.4879	48
14	.9046	.4263	46	14	.8892	.4576	46	14	.8726	.4884	46
16	.9043	.4268	44	16	.8889	.4581	44	16	.8724	.4889	44
18	.9041	.4274	42	18	.8886	.4586	42	18	.8721	.4894	42
20	.9038	.4279	40	20	.8884	.4592	40	20	.8718	.4899	40
22	.9036	.4284	38	22	.8881	.4597	38	22	.8715	.4904	38
24	.9033	.4289	36	24	.8878	.4602	36	24	.8712	.4909	36
26	.9031	.4295	34	26	.8875	.4607	34	26	.8709	.4914	34
28	.9028	.4300	32	28	.8873	.4612	32	28	.8706	.4919	32
30	.9026	.4305	30	30	.8870	.4617	30	30	.8704	.4924	30
32	.9023	.4310	28	32	.8867	.4623	28	32	.8701	.4929	28
34	.9021	.4316	26	34	.8865	.4628	26	34	.8698	.4934	26
36	.9018	.4321	24	36	.8862	.4633	24	36	.8695	.4939	24
38	.9016	.4326	22	38	.8859	.4638	22	38	.8692	.4944	22
40	.9013	.4331	20	40	.8857	.4643	20	40	.8689	.4950	20
42	.9011	.4337	18	42	.8854	.4648	18	42	.8686	.4955	18
44	.9008	.4342	16	44	.8851	.4654	16	44	.8683	.4960	16
46	.9006	.4347	14	46	.8849	.4659	14	46	.8681	.4965	14
48	.9003	.4352	12	48	.8846	.4664	12	48	.8678	.4970	12
50	.9001	.4358	10	50	.8843	.4669	10	50	.8675	.4975	10
52	.8998	.4363	8	52	.8840	.4674	8	52	.8672	.4980	8
54	.8996	.4368	6	54	.8838	.4679	6	54	.8669	.4985	6
56	.8993	.4373	4	56	.8835	.4684	4	56	.8666	.4990	4
58	.8990	.4378	2	58	.8832	.4690	2	58	.8663	.4995	2
26 0	.8988	.4384	64 0	28 0	.8829	.4695	62 0	30 0	.8660	.5000	60 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
30 0	.8660	.5000	60 0	32 0	.8480	.5299	58 0	34 0	.8290	.5592	56 0
2	.8657	.5005	58	2	.8477	.5304	58	2	.8287	.5597	58
4	.8654	.5010	56	4	.8474	.5309	56	4	.8284	.5602	56
6	.8652	.5015	54	6	.8471	.5314	54	6	.8281	.5606	54
8	.8649	.5020	52	8	.8468	.5319	52	8	.8277	.5611	52
10	.8646	.5025	50	10	.8465	.5324	50	10	.8274	.5616	50
12	.8643	.5030	48	12	.8462	.5329	48	12	.8271	.5621	48
14	.8640	.5035	46	14	.8459	.5334	46	14	.8268	.5626	46
16	.8637	.5040	44	16	.8456	.5339	44	16	.8264	.5630	44
18	.8634	.5045	42	18	.8453	.5344	42	18	.8261	.5635	42
20	.8631	.5050	40	20	.8450	.5348	40	20	.8258	.5640	40
22	.8628	.5055	38	22	.8446	.5353	38	22	.8254	.5645	38
24	.8625	.5060	36	24	.8443	.5358	36	24	.8251	.5650	36
26	.8622	.5065	34	26	.8440	.5363	34	26	.8248	.5654	34
28	.8619	.5070	32	28	.8437	.5368	32	28	.8245	.5659	32
30	.8616	.5075	30	30	.8434	.5373	30	30	.8241	.5664	30
32	.8613	.5080	28	32	.8431	.5378	28	32	.8238	.5669	28
34	.8610	.5085	26	34	.8428	.5383	26	34	.8235	.5674	26
36	.8607	.5090	24	36	.8425	.5388	24	36	.8231	.5678	24
38	.8604	.5095	22	38	.8421	.5393	22	38	.8228	.5683	22
40	.8601	.5100	20	40	.8418	.5398	20	40	.8225	.5688	20
42	.8599	.5105	18	42	.8415	.5402	18	42	.8221	.5693	18
44	.8596	.5110	16	44	.8412	.5407	16	44	.8218	.5698	16
46	.8593	.5115	14	46	.8409	.5412	14	46	.8215	.5702	14
48	.8590	.5120	12	48	.8406	.5417	12	48	.8211	.5707	12
50	.8587	.5125	10	50	.8403	.5422	10	50	.8208	.5712	10
52	.8584	.5130	8	52	.8399	.5427	8	52	.8205	.5717	8
54	.8581	.5135	6	54	.8396	.5432	6	54	.8202	.5721	6
56	.8578	.5140	4	56	.8393	.5437	4	56	.8198	.5726	4
58	.8575	.5145	2	58	.8390	.5442	2	58	.8195	.5731	2
31 0	.8572	.5150	59 0	33 0	.8387	.5446	57 0	35 0	.8192	.5736	55 0
2	.8569	.5155	58	2	.8384	.5451	58	2	.8188	.5741	58
4	.8566	.5160	56	4	.8380	.5456	56	4	.8185	.5745	56
6	.8563	.5165	54	6	.8377	.5461	54	6	.8181	.5750	54
8	.8560	.5170	52	8	.8374	.5466	52	8	.8178	.5755	52
10	.8557	.5175	50	10	.8371	.5471	50	10	.8175	.5760	50
12	.8554	.5180	48	12	.8368	.5476	48	12	.8171	.5764	48
14	.8551	.5185	46	14	.8364	.5480	46	14	.8168	.5769	46
16	.8548	.5190	44	16	.8361	.5485	44	16	.8165	.5774	44
18	.8545	.5195	42	18	.8358	.5490	42	18	.8161	.5779	42
20	.8542	.5200	40	20	.8355	.5495	40	20	.8158	.5783	40
22	.8539	.5205	38	22	.8352	.5500	38	22	.8155	.5788	38
24	.8536	.5210	36	24	.8348	.5505	36	24	.8151	.5793	36
26	.8532	.5215	34	26	.8345	.5510	34	26	.8148	.5798	34
28	.8529	.5220	32	28	.8342	.5515	32	28	.8145	.5802	32
30	.8526	.5225	30	30	.8339	.5519	30	30	.8141	.5807	30
32	.8523	.5230	28	32	.8336	.5524	28	32	.8138	.5812	28
34	.8520	.5235	26	34	.8332	.5529	26	34	.8134	.5816	26
36	.8517	.5240	24	36	.8329	.5534	24	36	.8131	.5821	24
38	.8514	.5245	22	38	.8326	.5539	22	38	.8128	.5826	22
40	.8511	.5250	20	40	.8323	.5544	20	40	.8124	.5831	20
42	.8508	.5255	18	42	.8320	.5548	18	42	.8121	.5835	18
44	.8505	.5260	16	44	.8316	.5553	16	44	.8117	.5840	16
46	.8502	.5265	14	46	.8313	.5558	14	46	.8114	.5845	14
48	.8499	.5270	12	48	.8310	.5563	12	48	.8111	.5850	12
50	.8496	.5275	10	50	.8307	.5568	10	50	.8107	.5854	10
52	.8493	.5279	8	52	.8303	.5573	8	54	.8104	.5859	8
54	.8490	.5284	6	54	.8300	.5577	6	54	.8100	.5864	6
56	.8487	.5289	4	56	.8297	.5582	4	56	.8097	.5868	4
58	.8484	.5294	2	58	.8294	.5587	2	58	.8094	.5873	2
32 0	.8480	.5299	58 0	34 0	.8290	.5592	56 0	36 0	.8090	.5878	54 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
36 0	.8090	.5878	54 0	38 0	.7880	.6157	52 0	40 0	.7660	.6428	50 0
2	.8087	.5883	58	2	.7877	.6161	58	2	.7657	.6432	58
4	.8083	.5887	56	4	.7873	.6166	56	4	.7653	.6437	56
6	.8080	.5892	54	6	.7869	.6170	54	6	.7649	.6441	54
8	.8076	.5897	52	8	.7866	.6175	52	8	.7645	.6446	52
10	.8073	.5901	50	10	.7862	.6180	50	10	.7642	.6450	50
12	.8070	.5906	48	12	.7859	.6184	48	12	.7638	.6455	48
14	.8066	.5911	46	14	.7855	.6189	46	14	.7634	.6459	46
16	.8063	.5915	44	16	.7851	.6193	44	16	.7630	.6463	44
18	.8059	.5920	42	18	.7848	.6198	42	18	.7627	.6468	42
20	.8056	.5925	40	20	.7844	.6202	40	20	.7623	.6472	40
22	.8052	.5930	38	22	.7841	.6207	38	22	.7619	.6477	38
24	.8049	.5934	36	24	.7837	.6211	36	24	.7615	.6481	36
26	.8045	.5939	34	26	.7833	.6216	34	26	.7612	.6486	34
28	.8042	.5944	32	28	.7830	.6221	32	28	.7608	.6490	32
30	.8039	.5948	30	30	.7826	.6225	30	30	.7604	.6494	30
32	.8035	.5953	28	32	.7822	.6230	28	32	.7600	.6499	28
34	.8032	.5958	26	34	.7819	.6234	26	34	.7596	.6503	26
36	.8028	.5962	24	36	.7815	.6239	24	36	.7593	.6508	24
38	.8025	.5967	22	38	.7812	.6244	22	38	.7589	.6512	22
40	.8021	.5972	20	40	.7808	.6248	20	40	.7585	.6517	20
42	.8018	.5976	18	42	.7804	.6252	18	42	.7581	.6521	18
44	.8014	.5981	16	44	.7801	.6257	16	44	.7578	.6525	16
46	.8011	.5986	14	46	.7797	.6262	14	46	.7574	.6530	14
48	.8007	.5990	12	48	.7793	.6266	12	48	.7570	.6534	12
50	.8004	.5995	10	50	.7790	.6271	10	50	.7566	.6539	10
52	.8000	.6000	8	52	.7786	.6275	8	52	.7562	.6543	8
54	.7997	.6004	6	54	.7782	.6280	6	54	.7559	.6547	6
56	.7993	.6009	4	56	.7779	.6284	4	56	.7555	.6552	4
58	.7990	.6014	2	58	.7775	.6289	2	58	.7551	.6556	2
37 0	.7986	.6018	53 0	39 0	.7771	.6293	51 0	41 0	.7547	.6561	49 0
2	.7983	.6023	58	2	.7768	.6298	58	2	.7543	.6565	58
4	.7979	.6027	56	4	.7764	.6302	56	4	.7539	.6569	56
6	.7976	.6032	54	6	.7760	.6307	54	6	.7536	.6574	54
8	.7972	.6037	52	8	.7757	.6311	52	8	.7532	.6578	52
10	.7969	.6041	50	10	.7753	.6316	50	10	.7528	.6583	50
12	.7965	.6046	48	12	.7749	.6320	48	12	.7524	.6587	48
14	.7962	.6051	46	14	.7746	.6325	46	14	.7520	.6591	46
16	.7958	.6055	44	16	.7742	.6329	44	16	.7516	.6596	44
18	.7955	.6060	42	18	.7738	.6334	42	18	.7513	.6600	42
20	.7951	.6065	40	20	.7735	.6338	40	20	.7509	.6604	40
22	.7948	.6069	38	22	.7731	.6343	38	22	.7505	.6609	38
24	.7944	.6074	36	24	.7727	.6347	36	24	.7501	.6613	36
26	.7941	.6078	34	26	.7724	.6352	34	26	.7497	.6617	34
28	.7937	.6083	32	28	.7720	.6356	32	28	.7493	.6622	32
30	.7934	.6088	30	30	.7716	.6361	30	30	.7490	.6626	30
32	.7930	.6092	28	32	.7713	.6365	28	32	.7486	.6631	28
34	.7926	.6097	26	34	.7709	.6370	26	34	.7482	.6635	26
36	.7923	.6101	24	36	.7705	.6374	24	36	.7478	.6639	24
38	.7919	.6106	22	38	.7701	.6379	22	38	.7474	.6644	22
40	.7916	.6111	20	40	.7698	.6383	20	40	.7470	.6648	20
42	.7912	.6115	18	42	.7694	.6388	18	42	.7466	.6652	18
44	.7909	.6120	16	44	.7690	.6392	16	44	.7463	.6657	16
46	.7905	.6124	14	46	.7687	.6397	14	46	.7459	.6661	14
48	.7902	.6129	12	48	.7683	.6401	12	48	.7455	.6665	12
50	.7898	.6134	10	50	.7679	.6406	10	50	.7451	.6670	10
52	.7894	.6138	8	52	.7675	.6410	8	52	.7447	.6674	8
54	.7891	.6143	6	54	.7672	.6414	6	54	.7443	.6678	6
56	.7887	.6147	4	56	.7668	.6419	4	56	.7439	.6683	4
58	.7884	.6152	2	58	.7664	.6423	2	58	.7435	.6687	2
38 0	.7880	.6157	52 0	40 0	.7660	.6428	50 0	42 0	.7431	.6691	48 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

Traverse-Table for a Distance = 1 (continued).

°	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /	° /	Lat. or N. S.	Dep. or E. W.	° /
42 0	.7431	.6691	48 0	43 0	.7314	.6820	47 0	44 0	.7193	.6947	46 0
2	.7428	.6696	58	2	.7310	.6824	58	2	.7189	.6951	58
4	.7424	.6700	56	4	.7306	.6828	56	4	.7185	.6955	56
6	.7420	.6704	54	6	.7302	.6833	54	6	.7181	.6959	54
8	.7416	.6709	52	8	.7298	.6837	52	8	.7177	.6963	52
10	.7412	.6713	50	10	.7294	.6841	50	10	.7173	.6967	50
12	.7408	.6717	48	12	.7290	.6845	48	12	.7169	.6972	48
14	.7404	.6722	46	14	.7286	.6850	46	14	.7165	.6976	46
16	.7400	.6726	44	16	.7282	.6854	44	16	.7161	.6980	44
18	.7396	.6730	42	18	.7278	.6858	42	18	.7157	.6984	42
20	.7392	.6734	40	20	.7274	.6862	40	20	.7153	.6988	40
22	.7388	.6739	38	22	.7270	.6867	38	22	.7149	.6992	38
24	.7385	.6743	36	24	.7266	.6871	36	24	.7145	.6997	36
26	.7381	.6747	34	26	.7262	.6875	34	26	.7141	.7001	34
28	.7377	.6752	32	28	.7258	.6879	32	28	.7137	.7005	32
30	.7373	.6756	30	30	.7254	.6884	30	30	.7133	.7009	30
32	.7369	.6760	28	32	.7250	.6888	28	32	.7128	.7013	28
34	.7365	.6764	26	34	.7246	.6892	26	34	.7124	.7017	26
36	.7361	.6769	24	36	.7242	.6896	24	36	.7120	.7021	24
38	.7357	.6773	22	38	.7238	.6900	22	38	.7116	.7025	22
40	.7353	.6777	20	40	.7234	.6905	20	40	.7112	.7030	20
42	.7349	.6782	18	42	.7230	.6909	18	42	.7108	.7034	18
44	.7345	.6786	16	44	.7226	.6913	16	44	.7104	.7038	16
46	.7341	.6790	14	46	.7222	.6917	14	46	.7100	.7042	14
48	.7337	.6794	12	48	.7218	.6921	12	48	.7096	.7046	12
50	.7333	.6799	10	50	.7214	.6926	10	50	.7092	.7050	10
52	.7329	.6803	8	52	.7210	.6930	8	52	.7088	.7055	8
54	.7325	.6807	6	54	.7206	.6934	6	54	.7083	.7059	6
56	.7321	.6811	4	56	.7201	.6938	4	56	.7079	.7063	4
58	.7318	.6816	2	58	.7197	.6942	2	58	.7075	.7067	2
43 0	.7314	.6820	47 0	44 0	.7193	.6947	46 0	45 0	.7071	.7071	45 0
° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /	° /	Dep. or E. W.	Lat. or N. S.	° /

TABLES FOR COMPUTING ALTITUDES.

TABLE I.—For Determining Difference of Level between Stations by Angles of Elevation or Depression.**(NOTE.—Multiply Tabular Difference of Level by Distance in Miles between Stations, and correct Product by Table II.)**

0°	Diff. of level.	1°	Diff. of level.	2°	Diff. of level.	3°	Diff. of level.
0	<i>Feet.</i>	0	<i>Feet.</i>	0	<i>Feet.</i>	0	<i>Feet.</i>
1	1.54	1	93.70	1	185.92	1	278.95
2	3.07	2	95.23	2	187.45	2	279.79
3	4.61	3	96.77	3	188.99	3	281.33
4	6.14	4	98.30	4	190.53	4	282.87
5	7.68	5	99.85	5	192.07	5	284.41
6	9.22	6	101.38	6	193.61	6	285.95
7	10.75	7	102.92	7	195.15	7	287.49
8	12.29	8	104.45	8	196.68	8	289.03
9	13.82	9	105.98	9	198.22	9	290.57
10	15.36	10	107.53	10	199.76	10	292.11
11	16.90	11	109.06	11	201.30	11	293.65
12	18.43	12	110.60	12	202.84	12	295.19
13	19.96	13	112.13	13	204.37	13	296.73
14	21.50	14	113.67	14	205.91	14	298.27
15	23.04	15	115.21	15	207.45	15	299.81
16	24.58	16	116.75	16	208.99	16	301.35
17	26.11	17	118.28	17	210.53	17	302.98
18	27.64	18	119.82	18	212.07	18	304.44
19	29.17	19	121.36	19	213.60	19	305.98
20	30.72	20	122.89	20	215.14	20	307.52
21	32.26	21	124.43	21	216.67	21	309.06
22	33.80	22	125.96	22	218.22	22	310.60
23	35.33	23	127.50	23	219.76	23	312.14
24	36.86	24	129.04	24	221.30	24	313.69
25	38.40	25	130.58	25	222.84	25	315.23
26	39.94	26	132.12	26	224.37	26	316.77
27	41.47	27	133.65	27	225.91	27	318.31
28	43.01	28	135.19	28	227.45	28	319.85
29	44.54	29	136.72	29	228.99	29	321.39
30	46.08	30	138.26	30	230.53	30	322.93
31	47.62	31	139.80	31	232.07	31	324.47
32	49.16	32	141.33	32	233.61	32	326.02
33	50.69	33	142.87	33	235.15	33	327.56
34	52.23	34	144.41	34	236.69	34	329.10
35	53.76	35	145.95	35	238.23	35	330.64
36	55.30	36	147.48	36	239.76	36	332.18
37	56.83	37	149.02	37	241.30	37	333.73
38	58.37	38	150.55	38	242.84	38	335.27
39	59.90	39	152.10	39	244.38	39	336.81
40	61.44	40	153.64	40	245.92	40	338.35
41	62.97	41	155.17	41	247.46	41	339.90
42	64.51	42	156.71	42	249.00	42	341.44
43	66.04	43	158.24	43	250.53	43	342.98
44	67.57	44	159.78	44	252.07	44	344.52
45	69.11	45	161.32	45	253.61	45	346.06
46	70.64	46	162.86	46	255.15	46	347.61
47	72.18	47	164.40	47	256.69	47	349.15
48	73.72	48	165.93	48	258.23	48	350.69
49	75.26	49	167.47	49	259.77	49	352.24
50	76.80	50	169.01	50	261.31	50	353.78
51	78.83	51	170.55	51	262.84	51	355.32
52	79.87	52	172.09	52	264.38	52	356.86
53	81.40	53	173.62	53	265.92	53	358.41
54	82.94	54	175.16	54	267.46	54	359.95
55	84.47	55	176.70	55	269.00	55	361.50
56	86.01	56	178.23	56	270.54	56	363.04
57	87.54	57	179.77	57	272.08	57	364.59
58	89.08	58	181.31	58	273.62	58	366.13
59	90.62	59	182.85	59	275.16	59	367.67
1 0	92.16	2 0	184.38	3 0	276.71	4 0	369.21

Table I (continued).

4°	Diff. of level.	5°	Diff. of level.	6°	Diff. of level.	7°	Diff. of level.
° ' Feet.	° ' Feet.	° ' Feet.	° ' Feet.	° ' Feet.	° ' Feet.	° ' Feet.	° ' Feet.
4 1 370.75	5 1 463.58	6 1 556.50	7 1 649.85				
2 372.30	2 465.12	2 558.05	2 651.41				
3 373.84	3 466.66	3 559.60	3 652.97				
4 375.38	4 468.21	4 561.16	4 654.53				
5 376.92	5 469.75	5 562.71	5 656.09				
6 378.47	6 471.99	6 564.26	6 657.65				
7 380.02	7 472.83	7 565.81	7 659.22				
8 381.56	8 474.37	8 567.36	8 660.77				
9 383.10	9 475.92	9 568.92	9 662.34				
10 384.65	10 477.46	10 570.47	10 663.90				
11 386.19	11 479.00	11 572.02	11 665.46				
12 387.73	12 480.54	12 573.57	12 667.02				
13 389.28	13 482.08	13 575.13	13 668.58				
14 390.82	14 483.63	14 576.68	14 670.14				
15 392.37	15 485.17	15 578.23	15 671.70				
16 393.91	16 486.71	16 579.79	16 673.26				
17 395.46	17 488.25	17 581.34	17 674.82				
18 397.00	18 489.79	18 582.90	18 676.38				
19 398.55	19 491.34	19 584.45	19 677.94				
20 400.09	20 492.90	20 586.01	20 679.50				
21 401.64	21 494.45	21 587.56	21 681.06				
22 403.18	22 496.00	22 589.11	22 682.62				
23 404.74	23 497.55	23 590.66	23 684.19				
24 406.27	24 499.10	24 592.21	24 685.75				
25 407.81	25 500.65	25 593.76	25 687.31				
26 409.36	26 502.20	26 595.31	26 688.87				
27 410.90	27 503.75	27 596.86	27 690.43				
28 412.45	28 505.30	28 598.41	28 691.99				
29 413.99	29 506.85	29 599.96	29 693.56				
30 415.54	30 508.40	30 601.52	30 695.12				
31 417.08	31 509.95	31 603.08	31 696.68				
32 418.63	32 511.50	32 604.64	32 698.24				
33 420.18	33 513.05	33 606.20	33 699.81				
34 421.72	34 514.60	34 607.76	34 701.37				
35 423.27	35 516.15	35 609.32	35 702.93				
36 424.81	36 517.70	36 610.88	36 704.50				
37 426.36	37 519.25	37 612.44	37 706.06				
38 427.91	38 520.80	38 614.00	38 707.62				
39 429.45	39 522.35	39 615.56	39 709.19				
40 431.00	40 523.90	40 617.11	40 710.75				
41 432.55	41 525.45	41 618.66	41 712.31				
42 434.09	42 527.00	42 620.21	42 713.88				
43 435.64	43 528.55	43 621.76	43 715.44				
44 437.19	44 530.10	44 623.31	44 717.00				
45 438.74	45 531.66	45 624.87	45 718.57				
46 440.28	46 533.21	46 626.43	46 720.13				
47 441.83	47 534.76	47 627.99	47 721.69				
48 443.38	48 536.31	48 629.55	48 723.26				
49 444.92	49 537.86	49 631.10	49 724.82				
50 446.47	50 539.41	50 632.66	50 726.38				
51 448.03	51 540.96	51 634.22	51 727.95				
52 449.58	52 542.51	52 635.78	52 729.52				
53 451.14	53 544.07	53 637.33	53 731.08				
54 452.70	54 545.62	54 638.88	54 732.65				
55 454.26	55 547.17	55 640.44	55 734.22				
56 455.81	56 548.72	56 642.00	56 735.78				
57 457.37	57 550.27	57 643.56	57 737.35				
58 458.93	58 551.83	58 645.14	58 738.92				
59 460.48	59 553.38	59 646.74	59 740.48				
5 0 462.04	6 0 554.95	7 0 648.29	8 0 742.05				

Table I (continued).

8°	Diff. of level.	9°	Diff. of level.	10°	Diff. of level.	11°	Diff. of level.
° ' 8	<i>Feet.</i>	° ' 9	<i>Feet.</i>	° ' 10	<i>Feet.</i>	° ' 11	<i>Feet.</i>
1	743.62	1	837.84	1	932.59	1	1027.92
2	745.18	2	839.41	2	934.17	2	1029.51
3	746.75	3	840.99	3	935.76	3	1031.10
4	748.32	4	842.56	4	937.34	4	1032.69
5	749.89	5	844.14	5	938.93	5	1034.28
6	751.45	6	845.72	6	940.51	6	1035.87
7	753.02	7	847.29	7	942.09	7	1037.46
8	754.59	8	848.87	8	943.67	8	1039.05
9	756.15	9	850.44	9	945.25	9	1040.64
10	757.72	10	852.02	10	946.83	10	1042.23
11	759.29	11	853.60	11	948.41	11	1043.83
12	760.86	12	855.17	12	950.00	12	1045.43
13	762.42	13	856.75	13	951.58	13	1047.03
14	764.99	14	858.32	14	953.17	14	1048.63
15	765.56	15	859.90	15	954.75	15	1050.23
16	767.13	16	861.48	16	956.34	16	1051.83
17	768.70	17	863.05	17	957.93	17	1053.43
18	770.26	18	864.63	18	959.51	18	1055.03
19	771.83	19	866.20	19	961.10	19	1056.63
20	773.40	20	867.78	20	962.69	20	1058.24
21	774.97	21	869.36	21	964.28	21	1059.84
22	776.54	22	870.94	22	965.87	22	1061.44
23	778.11	23	872.51	23	967.45	23	1063.04
24	779.68	24	874.09	24	969.04	24	1064.64
25	781.25	25	875.67	25	970.63	25	1066.24
26	782.82	26	877.25	26	972.21	26	1067.84
27	784.39	27	878.83	27	973.80	27	1069.44
28	785.96	28	880.40	28	975.38	28	1071.04
29	787.53	29	881.98	29	976.97	29	1072.64
30	789.10	30	883.56	30	978.55	30	1074.24
31	790.67	31	885.14	31	980.14	31	1075.84
32	792.24	32	886.72	32	981.73	32	1077.44
33	793.81	33	888.30	33	983.33	33	1079.03
34	795.38	34	889.88	34	984.92	34	1080.63
35	796.95	35	891.46	35	986.51	35	1082.23
36	798.52	36	893.04	36	988.10	36	1083.83
37	800.09	37	894.62	37	989.69	37	1085.43
38	801.66	38	896.20	38	991.27	38	1087.03
39	803.23	39	897.78	39	992.86	39	1088.63
40	804.80	40	899.36	40	994.45	40	1090.23
41	806.37	41	900.94	41	996.04	41	1091.83
42	807.94	42	902.52	42	997.64	42	1093.43
43	809.52	43	904.10	43	999.23	43	1095.03
44	811.09	44	905.68	44	1000.83	44	1096.64
45	812.66	45	907.26	45	1002.42	45	1098.24
46	814.23	46	908.84	46	1004.02	46	1099.84
47	815.80	47	910.42	47	1005.61	47	1101.45
48	817.38	48	912.00	48	1007.21	48	1103.05
49	818.95	49	913.58	49	1008.80	49	1104.65
50	820.52	50	915.16	50	1010.40	50	1106.26
51	822.09	51	916.74	51	1011.99	51	1107.86
52	823.67	52	918.33	52	1013.58	52	1109.47
53	825.24	53	919.91	53	1015.17	53	1111.07
54	826.82	54	921.50	54	1016.77	54	1112.67
55	828.39	55	923.08	55	1018.36	55	1114.28
56	829.96	56	924.66	56	1019.95	56	1115.88
57	831.54	57	926.25	57	1021.54	57	1117.48
58	833.11	58	927.83	58	1023.13	58	1119.09
59	834.69	59	929.42	59	1024.73	59	1120.69
9 0	836.26	10 0	931.00	11 0	1026.33	12 0	1122.30

Table I (continued).

12°	Diff. of level.	13°	Diff. of level.	14°	Diff. of level.	15°	Diff. of level.
° /	Feet.	° /	Feet.	° /	Feet.	° /	Feet.
12 1	1123.90	13 1	1220.60	14 1	1318.08	15 1	1416.41
2	1125.51	2	1222.22	2	1319.71	2	1418.05
3	1127.11	3	1223.84	3	1321.34	3	1419.69
4	1128.72	4	1225.46	4	1322.97	4	1421.33
5	1130.33	5	1227.08	5	1324.51	5	1422.98
6	1131.93	6	1228.70	6	1326.24	6	1424.63
7	1133.54	7	1230.32	7	1327.87	7	1426.28
8	1135.15	8	1231.94	8	1329.51	8	1427.93
9	1136.76	9	1233.56	9	1331.14	9	1429.58
10	1138.36	10	1235.18	10	1332.78	10	1431.23
11	1139.97	11	1236.80	11	1334.41	11	1432.88
12	1141.58	12	1238.42	12	1335.04	12	1434.53
13	1143.18	13	1240.04	13	1337.68	13	1436.18
14	1144.79	14	1241.66	14	1339.31	14	1437.83
15	1146.40	15	1243.28	15	1340.94	15	1439.48
16	1148.01	16	1244.90	16	1342.58	16	1441.13
17	1149.61	17	1246.52	17	1344.21	17	1442.78
18	1151.22	18	1248.14	18	1345.84	18	1444.43
19	1152.83	19	1249.76	19	1347.49	19	1446.09
20	1154.44	20	1251.38	20	1349.13	20	1447.75
21	1156.05	21	1253.00	21	1350.76	21	1449.40
22	1157.66	22	1254.63	22	1352.39	22	1451.05
23	1159.27	23	1256.25	23	1354.02	23	1452.70
24	1160.88	24	1257.88	24	1355.66	24	1454.35
25	1162.49	25	1259.50	25	1357.30	25	1456.00
26	1164.10	26	1261.12	26	1358.94	26	1457.65
27	1165.71	27	1262.75	27	1360.58	27	1459.30
28	1167.32	28	1264.37	28	1362.22	28	1460.95
29	1168.93	29	1266.00	29	1363.86	29	1462.60
30	1170.55	30	1267.62	30	1365.50	30	1464.25
31	1172.16	31	1269.25	31	1367.14	31	1465.90
32	1173.77	32	1270.87	32	1368.78	32	1467.55
33	1175.38	33	1272.50	33	1370.42	33	1469.21
34	1176.99	34	1274.12	34	1372.06	34	1470.87
35	1178.61	35	1275.75	35	1373.70	35	1472.53
36	1180.22	36	1277.37	36	1375.34	36	1474.19
37	1181.83	37	1279.00	37	1376.98	37	1475.85
38	1183.44	38	1280.62	38	1378.62	38	1477.51
39	1185.05	39	1282.24	39	1380.26	39	1479.17
40	1186.67	40	1283.87	40	1381.90	40	1480.83
41	1188.28	41	1285.49	41	1383.54	41	1482.49
42	1189.89	42	1287.13	42	1385.18	42	1484.14
43	1191.50	43	1288.76	43	1386.82	43	1485.80
44	1193.11	44	1290.39	44	1388.47	44	1487.46
45	1194.72	45	1292.02	45	1390.11	45	1489.12
46	1196.33	46	1293.65	46	1391.75	46	1490.78
47	1197.94	47	1295.28	47	1393.40	47	1492.44
48	1199.56	48	1296.91	48	1395.04	48	1494.10
49	1201.18	49	1298.54	49	1396.68	49	1495.76
50	1202.80	50	1300.17	50	1398.33	50	1497.42
51	1204.42	51	1301.79	51	1399.97	51	1499.08
52	1206.04	52	1303.42	52	1401.61	52	1500.74
53	1207.66	53	1305.05	53	1403.25	53	1502.40
54	1209.28	54	1306.68	54	1404.90	54	1504.06
55	1210.90	55	1308.31	55	1406.54	55	1505.72
56	1212.52	56	1309.94	56	1408.18	56	1507.38
57	1214.14	57	1311.57	57	1409.82	57	1509.04
58	1215.76	58	1313.20	58	1410.47	58	1510.70
59	1217.37	59	1314.83	59	1413.12	59	1512.36
13 0	1218.98	14 0	1316.45	15 0	1414.77	16 0	1514.02

TABLE II.—Correction for Curvature and Refraction.

Argument, Miles; Result Correction in Feet to be Added to the Product from Table I.

M.	Cor.	M.	Cor.	M.	Cor.	M.	Cor.	M.	Cor.	M.	Cor.
	<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>		<i>Feet.</i>
1.0	.57	3.5	6.99	6.0	20.57	8.5	41.27	11.0	69.12	13.5	104.10
1.1	.69	3.6	7.40	6.1	21.26	8.6	42.25	11.1	70.38	13.6	105.65
1.2	.82	3.7	7.82	6.2	21.96	8.7	43.24	11.2	71.65	13.7	107.21
1.3	.96	3.8	8.25	6.3	22.67	8.8	44.24	11.3	72.93	13.8	108.78
1.4	1.12	3.9	8.69	6.4	23.39	8.9	45.25	11.4	74.23	13.9	110.36
1.5	1.28	4.0	9.14	6.5	24.13	9.0	46.27	11.5	75.54	14.0	111.96
1.6	1.46	4.1	9.60	6.6	24.86	9.1	47.30	11.6	76.86	14.1	113.61
1.7	1.65	4.2	10.07	6.7	25.64	9.2	48.54	11.7	78.20	14.2	115.22
1.8	1.85	4.3	10.56	6.8	26.41	9.3	49.39	11.8	79.54	14.3	116.85
1.9	2.06	4.4	11.06	6.9	27.19	9.4	50.46	11.9	80.90	14.4	118.49
2.0	2.29	4.5	11.57	7.0	27.99	9.5	51.54	12.0	82.27	14.5	120.14
2.1	2.52	4.6	12.08	7.1	28.80	9.6	52.63	12.1	83.65	14.6	121.81
2.2	2.77	4.7	12.62	7.2	29.62	9.7	53.74	12.2	85.04	14.7	123.48
2.3	3.02	4.8	13.16	7.3	30.45	9.8	54.86	12.3	86.40	14.8	125.17
2.4	3.29	4.9	13.71	7.4	31.29	9.9	55.99	12.4	87.82	14.9	126.86
2.5	3.57	5.0	14.28	7.5	32.14	10.0	57.13	12.5	89.25	15.0	127.54
2.6	3.86	5.1	14.86	7.6	33.00	10.1	58.28	12.6	90.69	15.1	130.29
2.7	4.16	5.2	15.45	7.7	33.87	10.2	59.44	12.7	92.14	15.2	132.02
2.8	4.48	5.3	16.05	7.8	34.75	10.3	60.61	12.8	93.60	15.3	133.77
2.9	4.80	5.4	16.66	7.9	35.65	10.4	61.79	12.9	95.07	15.4	135.52
3.0	5.14	5.5	17.28	8.0	36.56	10.5	62.98	13.0	96.55	15.5	137.29
3.1	5.49	5.6	17.91	8.1	37.48	10.6	64.18	13.1	98.04	15.6	139.06
3.2	5.85	5.7	18.56	8.2	38.41	10.7	65.40	13.2	99.54	15.7	140.85
3.3	6.22	5.8	19.22	8.3	39.35	10.8	66.63	13.3	101.05	15.8	142.65
3.4	6.60	5.9	19.89	8.4	40.30	10.9	67.87	13.4	102.57	15.9	144.46
3.5	6.99	6.0	20.57	8.5	41.27	11.0	69.12	13.5	104.10	16.0	146.24

